35 CENTS

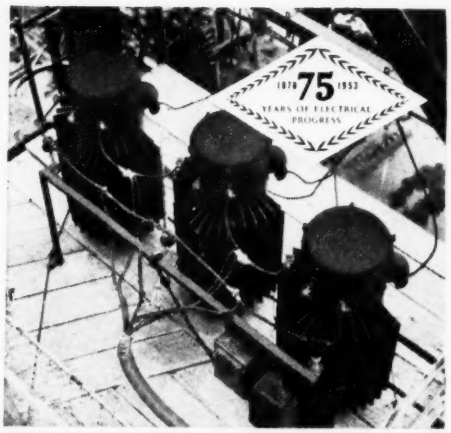
# CONSTRUCTION
## METHODS AND EQUIPMENT

November 1953

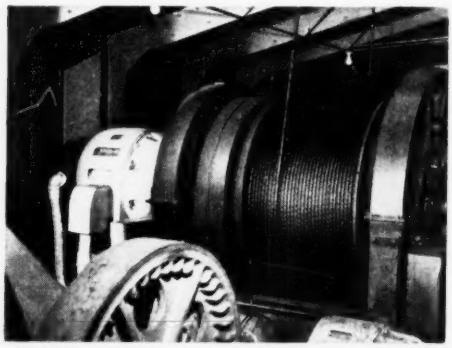
A McGRAW-HILL PUBLICATION

ENGINEERING REPORTS:

**ELECTRICAL CO-ORDINATION** provides continuous operation of this revolver crane 100 feet above the base of the huge intake structure. Movement along trestle is powered by a G-E 200-hp Type MR motor at foot of the gantry.




**ADEQUATE POWER** to maintain smooth, dependable crane performance is stepped down by these portable G-E transformers.



**RELIABLE DRIVES** must stand exacting demands of this revolver crane. G-E 200-hp motors and control are key to this application.

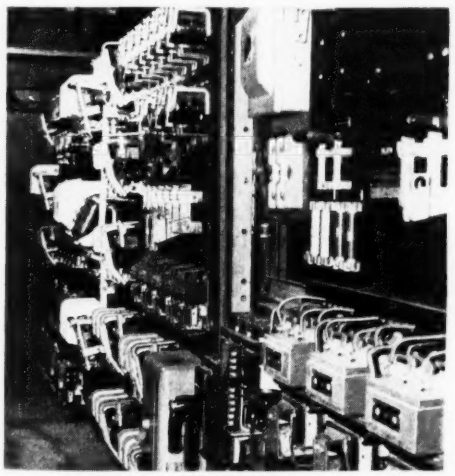
# Electricity helps Garrison Dam keep round-the-clock schedule

## G-E drives, still on the job after six years, are helping to harness Missouri River

At Garrison Dam near Bismarck, N. D., completely electrified equipment plays a vital role in keeping round-the-clock construction work on schedule. All electrical systems for the project's main stages were designed and co-ordinated by U. S. engineers, Peter Kiewit and Son Co., and Morrison-Knudsen Co. contractors—aided by G-E application engineering. This engineering teamwork resulted in maximum working capacity and fast, smooth operation.

Let G-E application engineers help *you* get the most from your construction equipment through electrification—from the smallest drive to the largest power distribution system. Contact your nearest G-E Apparatus Sales Office. General Electric Co., Schenectady 5, New York.

66-31



**CENTRALIZED CONTROL** equipment on this compact G-E panel is mounted in the cab for simple one-man operation.

**Engineered Electrical Systems for Heavy Construction**

**GENERAL ELECTRIC**

# B.F.Goodrich

## Off-the-road tires carry 30 tons 4,500 hours a year

THE trucks of the Penn Dixie Cement Corporation, Nazareth, Pa., roll over a rock-strewn quarry floor, then back up a steep incline to dump their load of rock. This rugged hauling job goes on more than 80 hours a week—with 15 tons of rock plus a truck weight of 15 tons for the tires to carry.

For such punishing work, the company uses B. F. Goodrich tires exclusively. The report: these tires stand up so well they can be recapped *twice* for 90% of new-tire service per recap! The tires in the picture have already run more than 4,300 hours. The patented B. F. Goodrich nylon shock shield is one reason for this amazing record.

Layers of strong, elastic nylon cords under the tread stretch together to protect the tire body from rock cuts and bruises. This means you get more original hours of service, more recappable tires and more hours of service per recap, increased bruise resistance and less danger of tread separation. You save 4 ways, yet you pay nothing extra for the exclusive nylon shock shield.

B. F. Goodrich Universal tires are built with a specially-compounded tread that resists snags and cuts, gives 2-way traction and longer wear. This is one more reason why you get better performance from B. F. Goodrich off-the-road tires. See the complete money-saving line at your B. F. Goodrich retailer's store. The address is listed under Tires in the Yellow Pages of your phone book. Or mail the coupon below.

**Specify B. F. Goodrich tires when ordering new equipment**

RESEARCH KEEPS B.F.Goodrich FIRST IN RUBBER

***The B. F. Goodrich Company***
***Department TO-146, Akron 18, Ohio***

Please send:

- ☐ Catalog on Universal tires
- ☐ Free booklet, "How to get more recaps out of truck tires"
- ☐ Name of my nearest retailer

Name_____

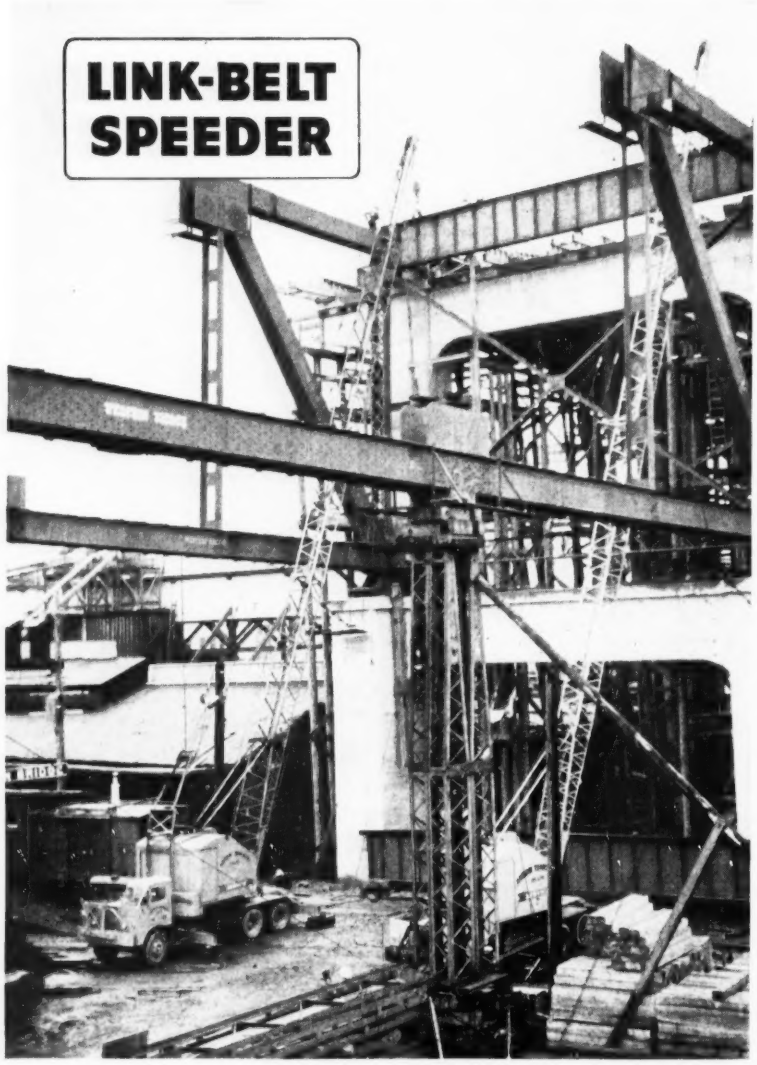
Company_____

Street_____

City_____ Zone____ State_____

***Before you buy a Truck-Crane:***

# Check safety, mobility!




These two HC-90's, with 80-ft. booms, speed a steel erection job in Vancouver, B.C. At times, one of the rigs is equipped with a 90-ft. boom and a 20-ft. jib.

*Patented Retractable Gantry* is raised or lowered under power in minutes. Raised gantry decreases load on boom, hoist cable and mechanism . . . results in safer operation.

**Link-Belt Speeder HC-51 and HC-90 Truck-Crane designs assure more work per shift, greater earnings per job**

TAKE the HC-90 for example: here's a 25-ton capacity rig that has upper machinery specifically engineered to match its extra lifting capacity.

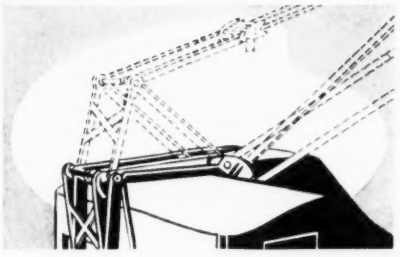
While this special design increases performance and stability, it's only one of the many advantages you get with a Link-Belt Speeder. In addition to rugged all-welded construction and heavy-duty components throughout, there are features such as: patented retractable gantry, hook-type conical shaped rotating rollers and pin-connected hinge-type boom.

Then, too, with ten speeds forward and positive drive to four full-floating rear wheels plus removable rear outriggers, the fully convertible HC-90 travels and works almost anywhere. It's this quick mobility that helps turn small, scattered assignments into real profit-makers.

For details on the 25-ton capacity HC-90, see your distributor or write for catalog 2350. For facts on the 12½-ton capacity HC-51, ask for catalog 2428.

**LINK-BELT SPEEDER CORPORATION**
**Cedar Rapids, Iowa**

13,304



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**CORPORATION**
**BUILDERS OF A COMPLETE LINE OF CRAWLER, TRUCK AND WHEEL-MOUNTED SHOVEL-CRANES**

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- Macwhyte's PREforming process forms the wires and strands into a spiral so they lie naturally in place with a minimum of internal stress.
- From a thousand and one wire ropes, Macwhyte engineers are ready to recommend the right rope for your particular needs. For best, lowest cost wire rope service, write today for recommendations of the best constructions of rope to use on all your equipment.

***This Macwhyte Rope is 6 x 41 Filler Wire PREformed Lang Lay Monarch Whyte Strand with IWRC, just one of the thousand and one wire ropes made by Macwhyte.***

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1044

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Please send information on items checked.

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☐ Shores ☐ Forms

Name_____

Address_____

City_____ Zone ____ State_____



# CONSTRUCTION METHODS AND EQUIPMENT

Volume 35, Number 11 **NOVEMBER 1953** Established 1919


## Pay Dirt in This Issue


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# WHAT ARE YOUR BEST BUYS IN TIRES ?

All-Weather, Sure-Grip—T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

AREN'T they the tires that take your toughest jobs in stride? Those that show you more profits in more work well done? Those that live the longest most useful lives—with minimum down time for *any* reason?

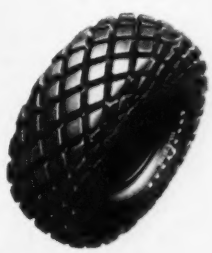
Here's why so many truck users say the best tire buy is a Goodyear:

Goodyear has built and sold 600 million pneumatic vehicle tires *alone*—more tires for more specific uses than anyone else on earth. That is because the public has learned from experience that Goodyear tires are standouts in all-round performance—*that Goodyears give you extra dependability, extra safety, extra mileage!*

So when you buy or specify Goodyear, you get all this EXTRA value without extra cost! Let your dealer prove it to you. Goodyear, Truck Tire Dept., Akron 16, Ohio.

**HARD ROCK LUG**
for tire-killing work.

**SURE-GRIP**
top choice for traction.



**ALL-WEATHER**
for maximum flotation.

*FOR EACH JOB, THERE'S A COST-CUTTING GOODYEAR TIRE!*

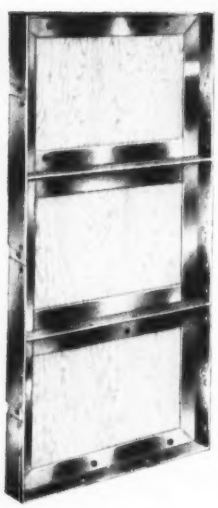
# GOODYEAR

**MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND**

# Simplified Concrete Forming System

## *for Lowest all around Form Costs!*

## 3 BASIC ELEMENTS



**UNI-FORM Panels**

Prefabricated . . . ready to use when they reach your job.

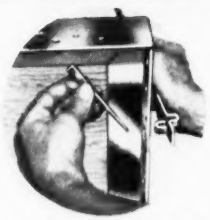
**UNI-FORM Tie**

Locks, spreads and ties . . . absolutely accurate.

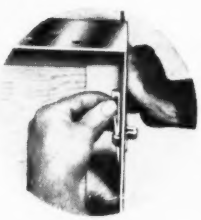
**UNI-FORM Tie Key**

Wedge-Shaped for fast, easy insertion.

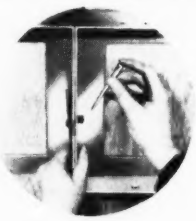
## 3 SIMPLE OPERATIONS



1 Place the Uni-Form Tie Loop into the Tie Hole.



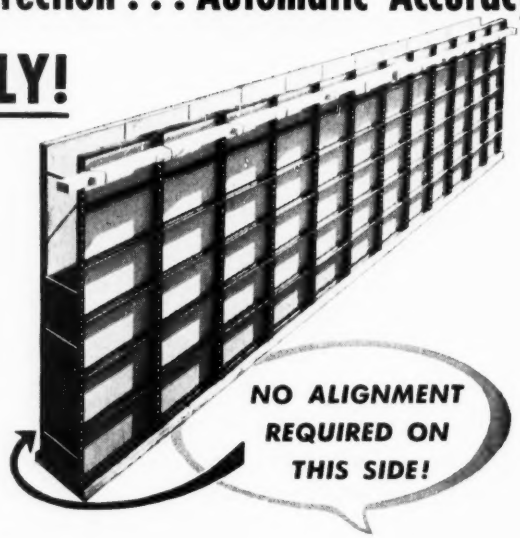
2 Set the Tie Key into the Tie Loop. Panel and Tie are then locked into one integral unit.



3 Bring the next UNI-FORM Panel into position . . . insert the Tie Key. The assembly is now completed.

## UNI-FORM® Panels Assure Faster Erection . . . Automatic Accuracy

## ALIGNMENT ON 1 SIDE ONLY!

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# Count 'em again!

# 53 NORTHWESTS on the WEST VIRGINIA TURNPIKE

The advertisement below appeared recently in Engineering News Record. Since that time 15 Northwests have joined the other 38 in building this rugged engineering project. The count for today appears at the right!

38
NORTHWESTS
on the
WEST VIRGINIA
TURNPIKE
The West Virginia Turnpike is adding another epic to the story of road building. Here, through the mountains, rugged terrain is putting a real test on equipment. It is significant that 38 Northwests are helping to build this latest of famous Turnpikes—Thirty eight—more than any other make of similar equipment.
These Northwests are owned by contractors whose names alone are testimonials to the quality of Northwest performance. Look over the list. Where could you find a testimonial that would better assure you that Northwest Equipment will give you the type of service you are looking for?
NORTHWEST ENGINEERING COMPANY
1502 Field Bldg., 135 South LaSalle Street, Chicago 3, Illinois
W. E. Graham, Cleveland, N.C.
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One Model 25
One Model 80-D
Latrobe Constr. Co., Latrobe, Pa.
Three Model 80-D's
One Truck Crane
H. W. Holt & Son, Columbus, Ohio
Two Model 80-D's
Oman Constr. Co., Nashville, Tenn.
One Model 25
One Model 80-D
Central Pa. Quarry, Stripping & Constr. Co., Hazelton, Pa.
Three Model 80-D's
Reed Kuhn, Elysburg, Pa.
One Model 25
One Truck Crane
Clark Farrell & H. N. Rogers
Pine Bluff, Ark. — Memphis, Tenn.
One Model 80-D
One Model 78-D
Two Model 6's
One Model 4
Nello Teer, Durham, N. C.
Three Model 80-D's
D. R. Agnew, Ronceverte, W. Va.
One Model 6
Ralph Mills Co. & Morrison Knudsen
Salem, Va. — Boise, Idaho
Five Model 80-D's
Two Model 6's
Condon Cunningham & Kiewit
Omaha, Nebraska
Three Model 80-D's
One Model 6
S. J. Groves & Son, Minneapolis, Minn.
One Model 6
Has Your Shovel Stood the ROCK TEST
NORTHWEST
SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

**W. E. Graham, Cleveland, N.C.**
Two Model 6's
One Model 25
One Model 80-D

**Latrobe Constr. Co., Latrobe, Pa.**
Three Model 80-D's
One Truck Crane

**H. W. Holt & Son, Columbus, Ohio**
Two Model 80-D's

**Oman Constr. Co., Nashville, Tenn.**
One Model 25
One Model 80-D

**Central Pa. Quarry, Stripping & Construction Co., Hazelton, Pa.**
Three Model 80-D's

**Reed Kuhn, Elysburg, Pa.**
One Model 25
One Truck Crane

**Clark Farrell & H. N. Rogers Pine Bluff, Ark. — Memphis, Tenn.**
One Model 80-D
One Model 78-D
Two Model 6's
One Model 4

**Nello Teer, Durham, N. C.**
Four Model 80-D's

**D. R. Agnew, Ronceverte, W. Va.**
One Model 6

**Ralph Mills Co. & Morrison Knudsen Salem, Va. — Boise, Idaho**
Five Model 80-D's
Two Model 6's

**Condon Cunningham & Kiewit Omaha, Nebraska**
Three Model 80-D's
One Model 6

**S. J. Groves & Son Minneapolis, Minn.**
One Model 6
One Model 80-D

**C. C. Conley, Walton, W. Va.**
One Model 80-D

**Ruth Construction Co., Scotdale, Pa.**
One Model 80-D

**H. R. Anderson, Mt. Hope, W. Va.**
One Model 80-D

**Walhonde Coal & Construction Co. Charleston, W. Va.**
One Model 80-D

**L. S. Coleman, Inc., St. Albans, W. Va.**
Two Model 80-D's

**Suber & Company & R. D. Foster, Co. Whitmire, S. C.**
One Model 80-D
Two Model 6's

**Bob Webb, Charleston, W. Va.**
One Model 80-D

**Les Hatfield, Barbersville, W. Va.**
One Model 6

**T. E. Ritter, Norfolk, Va.**
One Model 6

**V. L. Allen, Princeton, W. Va.**
One Model 25

# NORTHWEST

**SHOVELS • CRANES • DRAGLINES • PULLSHOVELS**

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ENGINEERING COMPANY
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135 South LaSalle Street, Chicago 3, Illinois

# ON JOBS LIKE

## The Texaco Simplified Lubrication Plan saves time, mistakes and money

**THE BIGGER THE JOB,** the more you need the Texaco Simplified Lubrication Plan. It enables you to *handle all your major lubrication with no more than six Texaco Products!* The following comments by contractors are typical:

*"The time and confusion saved by the Texaco Simplified Lubrication Plan are incalculable."*

General-Shea-Morrison Co.,
Hungry Horse Dam, Montana

*"By reducing the number of lubricants we have to use, we have substantially reduced the chance of error in application, and have speeded our maintenance work . . . keeping our equipment on the job and our maintenance costs low."*

Chief Joseph Builders,
Chief Joseph Dam,
Bridgeport, Washington

*"The saving of time and elimination of guesswork . . . were important contributing factors in completing the contract on schedule."*

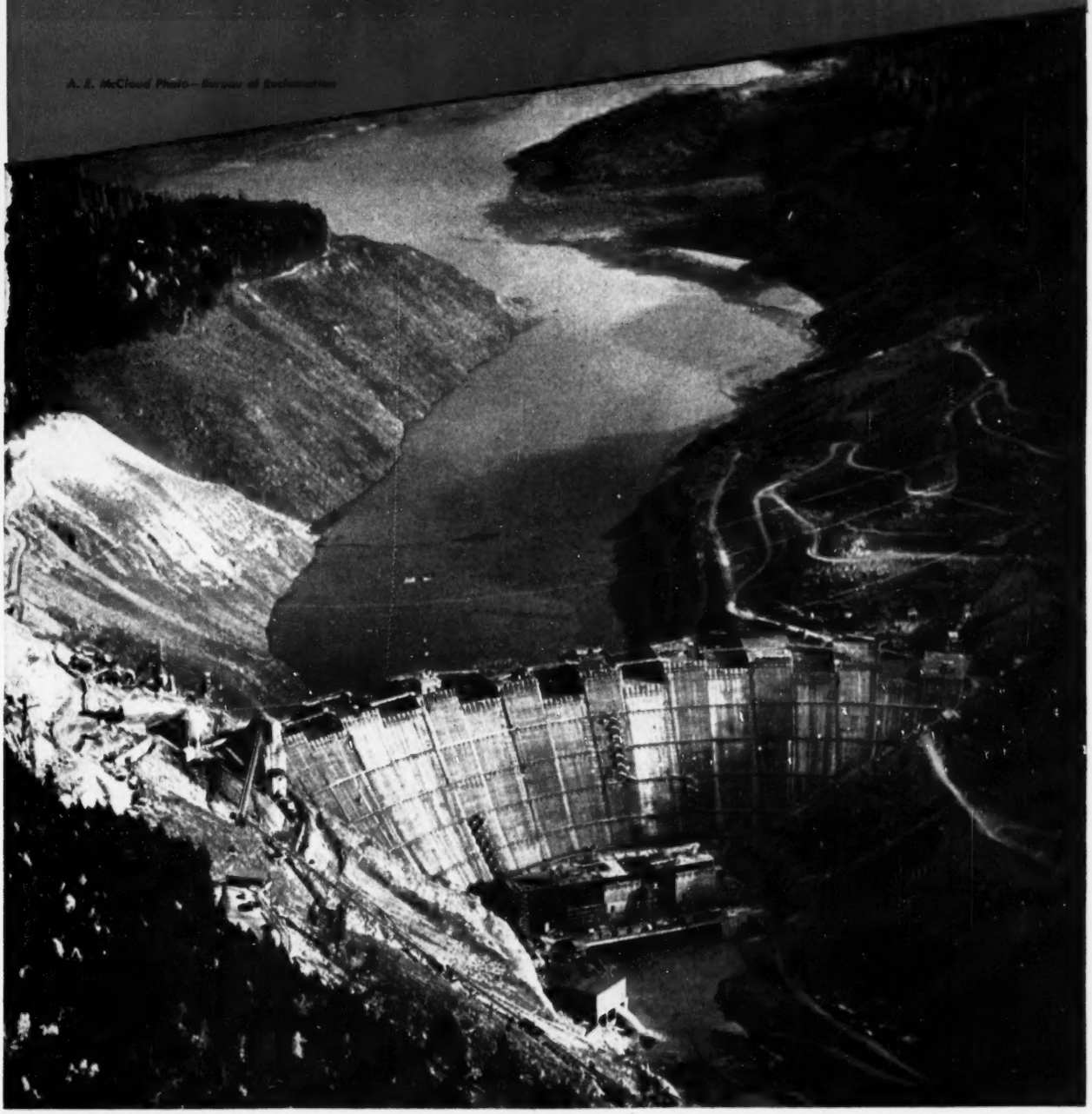
J. M. Corbett — M. J. Boyle Co.,
O'Hare Field Base Extension,
Chicago, Illinois

A Texaco Lubrication Engineer will gladly develop for you a Texaco Simplified Lubrication Plan exactly suited to your equipment and operating conditions. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TEXACO

# HUNGRY HORSE DAM

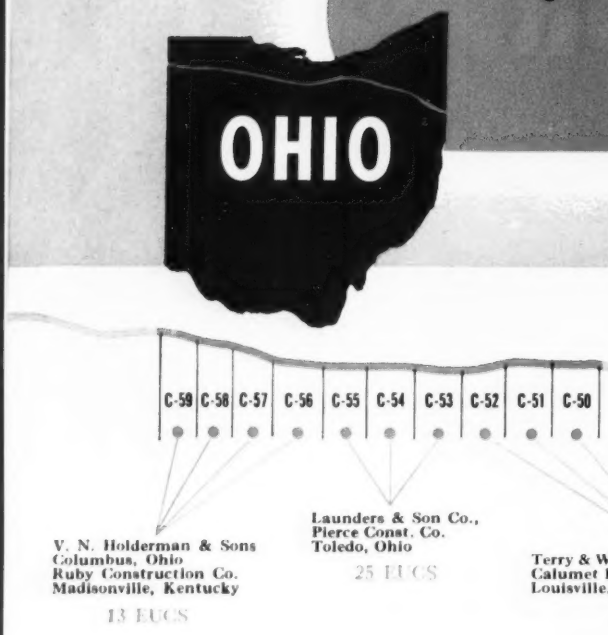


A. E. McCloud Photo—Bureau of Reclamation

## Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

# Another Turnpike . . . Eucs Get




*Green figures indicate number of Euclids in current use.*

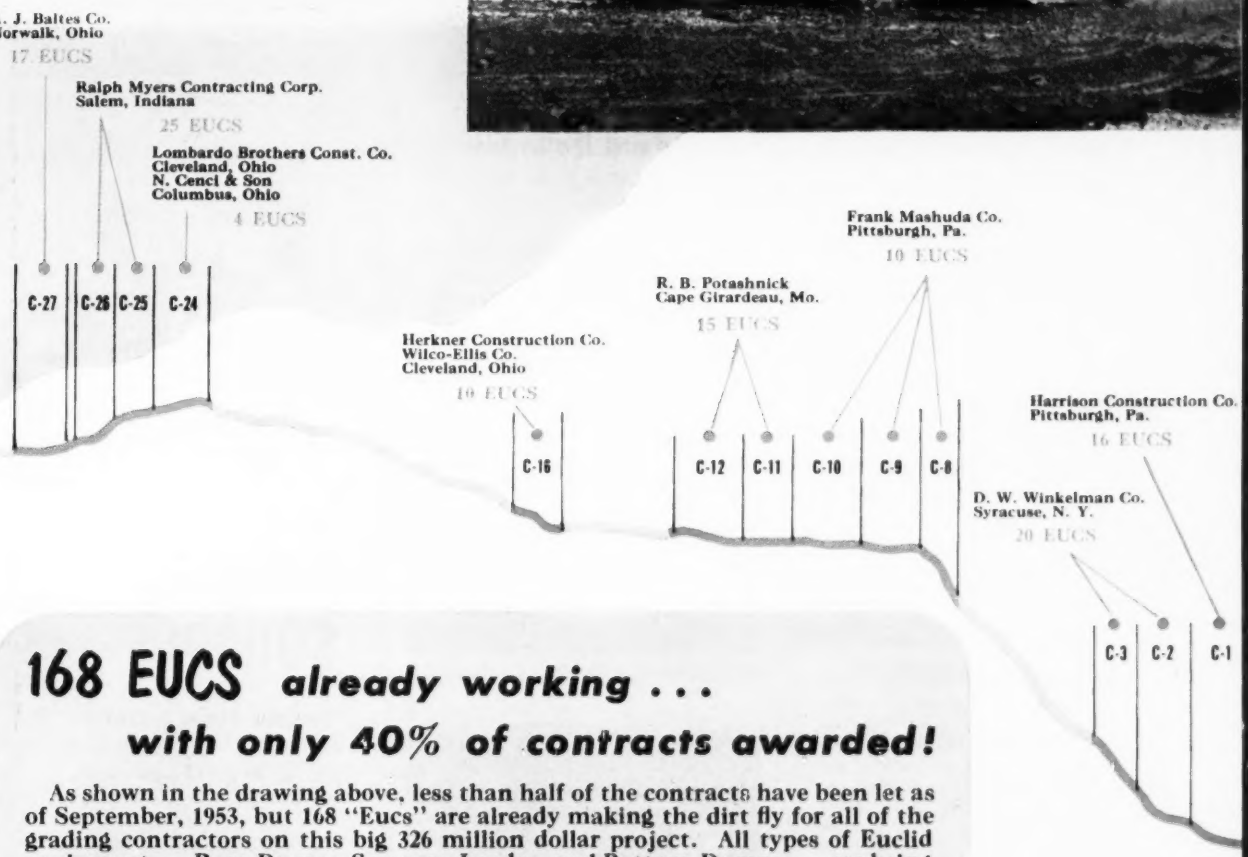
## HISTORY REPEATS!

### . . . it's "EUCS" on the Ohio Turnpike now!

The new 241 mile Ohio Turnpike, stretching across the state from Pennsylvania to the Indiana border is now under way. Although contracts for only about 40% of the project have been awarded, 168 "Eucs" are already moving earth and rock on the excavation and heavy grading, and many more will move on the job as the work progresses all along the way.

Just as most of the contractors on every new toll road built during the past 15 years . . . in Pennsylvania, New Jersey, Maine, West Virginia, New York, Oklahoma and others . . . have relied on Euclid equipment, contractors working on this newest turnpike are also counting on "Eucs" to get their earth moving done on schedule and at a profit.

# . . . and again the Call!




## 168 EUCS *already working . . .*
## *with only 40% of contracts awarded!*

As shown in the drawing above, less than half of the contracts have been let as of September, 1953, but 168 "Eucs" are already making the dirt fly for all of the grading contractors on this big 326 million dollar project. All types of Euclid equipment . . . Rear-Dumps, Scrapers, Loaders and Bottom-Dumps . . . are being used according to the specialized requirements of every job along the way.

It's not mere coincidence that contractors on practically every big rush earth moving project . . . and on the smaller jobs, too . . . are almost unanimous in their selection of Euclid equipment. They know that Euclid is the pioneer and leader in the earth moving field and that "Eucs" are backed by a world-wide distributor organization with unexcelled parts and service facilities.

When your competitors have the benefit of high production at low cost provided by "Eucs," you need all of the profit making advantages that can be yours with Euclid equipment. Your distributor will be glad to supply all the facts, so get in touch with him right away.

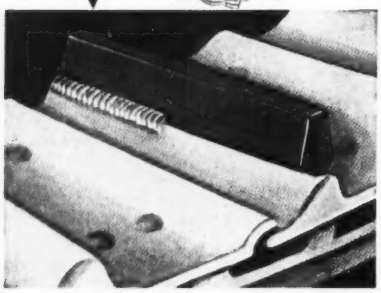
**The EUCLID ROAD MACHINERY CO., Cleveland 17, Ohio**

CABLE ADDRESS: YUKLID CODE: BENTLEY

# Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

# restore
## gripping power
### to worn-down grousers!



Weld Marquette Tractor Strip to your worn grousers to restore pulling power, reduce wear on the track, haul more pay loads per day. Marquette Tractor Strip is made of special wear-resistant steel . . . pre-formed for easy, efficient welding to the grouser edge. Available in random-length bars of 10 to 14 feet, or cut to your specifications. For complete information, ask your jobber . . . or write to Marquette Manufacturing Co., 307 E. Hennepin Avenue, Minneapolis 14, Minnesota.

MARQUETTE

**Tractor Strip**

MARQUETTE MANUFACTURING CO., INC.

307 E. Hennepin Avenue, Minneapolis 14, Minn.

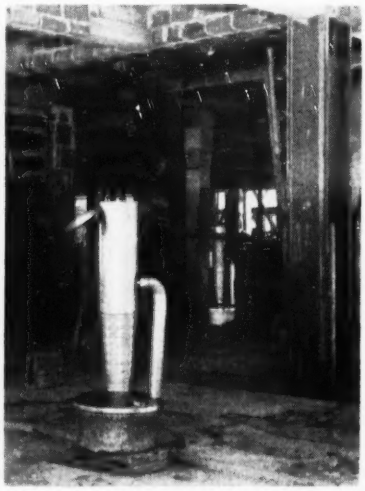

# ★ JOB TALK ★

## . . . About Methods

### Pipe Eased Downhill

John Hameseder of Long Hill, Conn., sends a picture and description of handling sections of heavy concrete pipe on a downslope without endangering men or damaging the pipe, which has a diameter of 36 in. Pipe sections are 24 in. long.

First, a wire rope is anchored to a tree or stump at the top of the hill. A set of rollers on a homemade frame is inserted inside the pipe section and a block and fall attached to the frame. The stationary end of the tackle is clamped to the anchor rope, and the heavy pipe eased downgrade easily by two men. The idea works in reverse, too, when heavy conduit must be rolled upgrade. A powered winch attached to the roller frame simplifies and speeds the work when one is available.



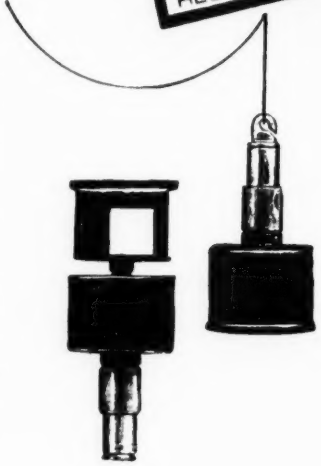
### Heat Keeps Job Moving

Canadian contractors get more than their share of cold weather in a normal year, and it takes special doing to keep many jobs going in winter. This picture of ma-

*(Continued on page 18)*


FOR YOUR
# WATCH CHAIN

WILD HEERBRUGG



# OPTICAL SQUARES

Pentagonal Prisms or Optical Squares, the size of a plumb bob and the weight of a jack knife, can be kept on your watch chain.

The Optical Square is a handy tool for checking on location, for alignment, and for laying out right angles. Speedily used as a hand level, it has an accuracy in leveling of 1 inch in 200 feet. The instrument is available in single and double prisms.

For further detailed information on the operation and use of Optical Squares call or write for Booklet CM 11

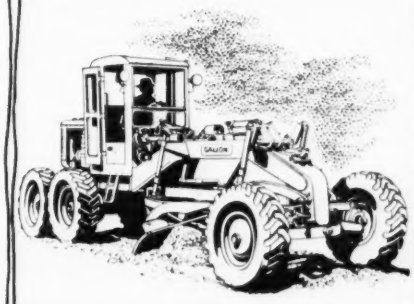
*Extensive repair and servicing facilities by factory trained specialists.*

HENRY WILD
SURVEYING INSTRUMENTS SUPPLY CO.
OF AMERICA, INC.
MAIN & COVERT STS., PORT WASHINGTON, N. Y.
POrt Washington 7-4843

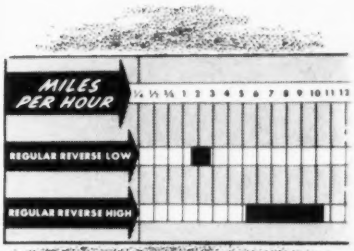
# GALION WAS FIRST!

**1. TO GIVE YOU HYDRAULIC BOOSTER STEERING AS STANDARD EQUIPMENT** – for ease of operation.

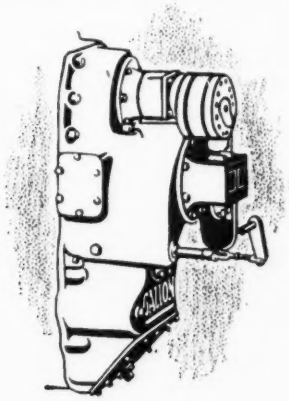
**2. TO GIVE YOU SAME SIZE (LARGE) TIRES, FRONT AND REAR** – for best flotation and more axle clearance.



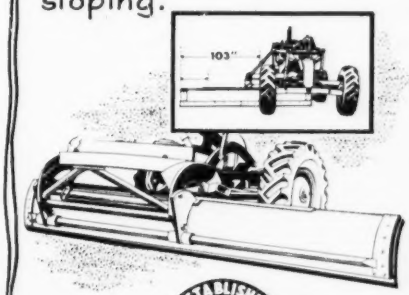
**3. TO SUPPLY A HIGH SPEED REVERSE GEAR** – – – you can accomplish more work.




**4. TO MAKE AVAILABLE A "CREEPER" TRANSMISSION** – – for work requiring extremely low speeds – – to 1/3 M.P.H.

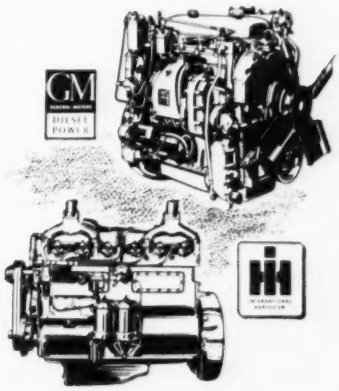


**5. TO BUILD HYDRAULIC SHIFTABLE MOLDBOARDS ON TANDEM DRIVE MOTOR GRADERS** – operated from platform – – increases reach for grading, maintaining and bank sloping.




ESTABLISHED GALION 1907

**6. TO OFFER YOU A CHOICE OF TWO MAKES OF DIESEL ENGINES (IHC or GM)** – permits standardization of parts and service.




## THE GALION IRON WORKS & MFG. COMPANY

GALION, OHIO, U.S.A.

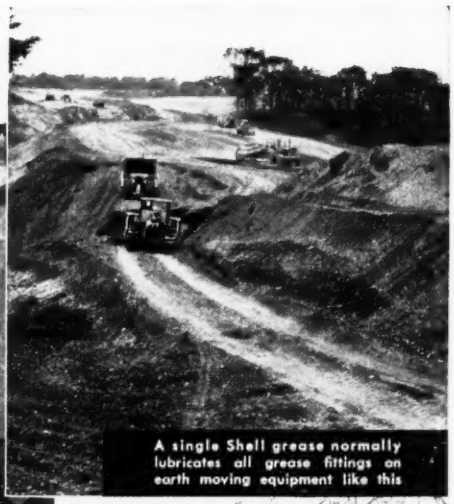
Cable address: GALIONIRON, Galion, Ohio

*MANUFACTURERS OF*

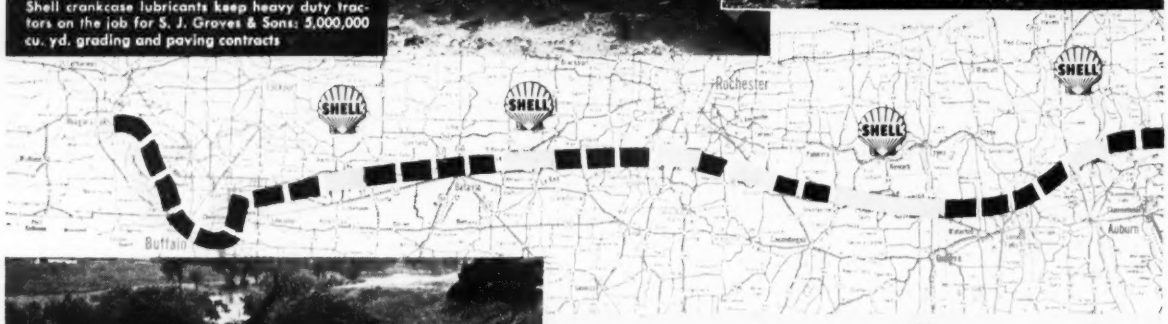
GALION MOTOR GRADERS

# On the New York State Thruway

Shell crankcase lubricants keep heavy duty tractors on the job for S. J. Groves & Sons: 5,000,000 cu. yd. grading and paving contracts



A single Shell grease normally lubricates all grease fittings on earth moving equipment like this



Severe operation causes no motor problem with Shell Heavy Duty oil in the crankcase

Shell E. P. Gear Lubricant takes the punishment during rough going on steep grades

Arute Bros., Inc. depend upon the "stay-put" qualities of Shell's Multi-Purpose Grease for continuous heavy duty work

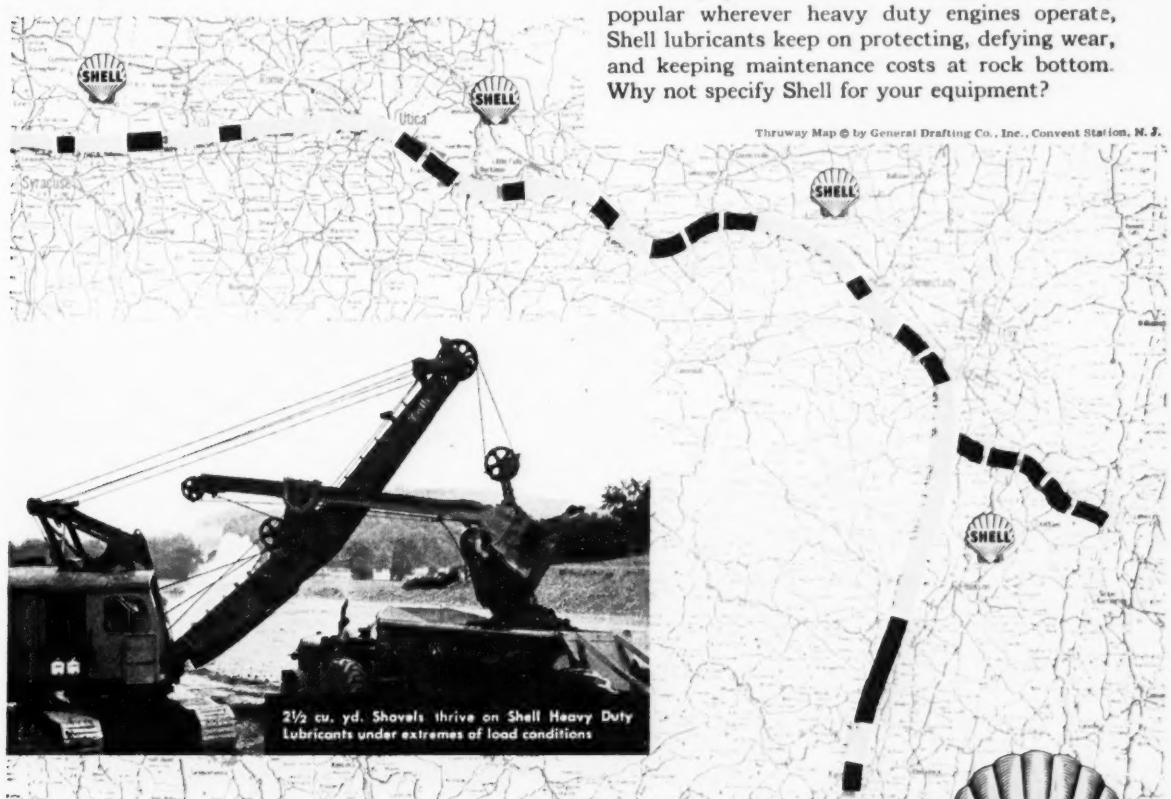
# ... 1 out of every 3 construction miles uses SHELL PRODUCTS *exclusively*

That's just one way of saying that Shell has been awarded contracts by companies responsible for building sections of the New York State Thruway totaling over one third of the entire mileage. And the contracts are still coming in!

Trucks, shovels, dozers, graders . . . all equipment run by gasoline or diesel engines on those long stretches of highway construction . . . benefit from the outstanding performance of Shell heavy duty lubricants.

Products that can win the unqualified preference of such responsible and efficient operators must have what it takes . . . and Shell products *have* it . . . plenty!

Most popular on the Thruway, and equally popular wherever heavy duty engines operate, Shell lubricants keep on protecting, defying wear, and keeping maintenance costs at rock bottom. Why not specify Shell for your equipment?




Thruway Map © by General Drafting Co., Inc., Convent Station, N. J.



2½ cu. yd. Shovels thrive on Shell Heavy Duty Lubricants under extremes of load conditions

**SHELL OIL COMPANY**

**50 WEST 50TH STREET, NEW YORK 20, N. Y.**
**100 BUSH STREET, SAN FRANCISCO 6, CALIF.**

SHELL

# Sing A Song of Savings with The Tuffy Quartet

## Tuffy SLINGS

**"Couldn't Kink Them, Even When We Tried," Says owner of an Eastern construction company.**

Only Tuffy Slings give you the patented 9 part machine-braided wire fabric construction that resists knots and kinks . . . stands up longer than ordinary wire rope under rugged use. The 9 parts are interlaced in an exclusive way, forming a fabric that can be repeatedly bent around small radii and abrupt corners. You'll find Tuffy Slings are extra flexible, extra strong—and they can save you up to 40% on sling costs! Remember, they're proof tested to *twice* the safe working load.

No need to worry about knotting and kinking when you use Tuffy Slings.

## Tuffy DRAGLINE

**"Best Wire Rope Service . . . on 33 Draglines" Says Superintendent of a Florida rock producing company.**

Easy to handle, Tuffy Draglines are designed to take sharper bends, angle pulls and rapid line speed. Wires of finest steel provide extra flexibility without sacrificing other quaiities . . . and you'll find Tuffy Draglines have a super tough construction for maximum resistance to drum crushing abuse, crawling on guide roll flanges, etc. Union-formed (pre-formed) Tuffy construction stands up longer than ordinary wire rope under line pull, multiplied shock of load on slack line and the stress of all types of material! Tuffy is easy to order, too! All you need is—length, diameter and the name . . . "Tuffy!"

On jobs like the building of Dams, Tuffy Draglines give dependable performance on any type of equipment.

UNION WIRE ROPE CORP

# union Wire Rope corporation

Specialists in Wire Rope and Braided Wire Fabric

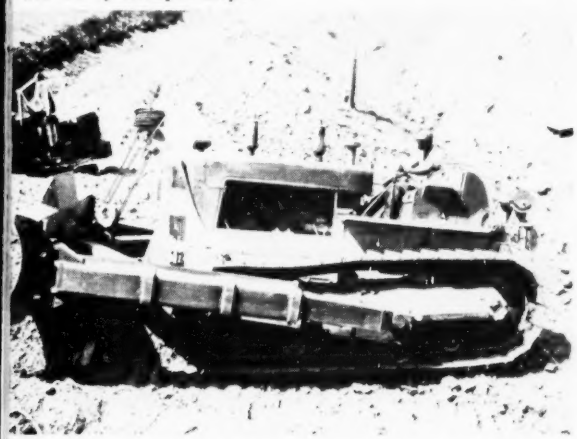
**Tuffy SLINGS**

**Tuffy DRAGLINE**

**Tuffy SCRAPER ROPE**

**Tuffy DOZER ROPE**

Grading jobs, like this one near Cadillac, Michigan, call for Tuffy Scraper Rope.



Moving overburden at this West Virginia strip mine is the kind of day-in, day-out job where Tuffy Dozer Rope steadily proves its extra worth.

## Tuffy SCRAPER ROPE

**"Outlast Other Rope Almost 2 to 1" Says a Middlewestern Contractor**

Wheel scrapers need a wire rope that will stand up under more varied strains and stresses than hoist or other standard ropes . . . and Tuffy Scraper Rope fills the bill! Each strand is pre-shaped, which relieves it of internal stresses. This leaves the full strength of every strand free to carry its share of the rope load. Tuffy Scraper Rope is flexible enough to stand up under sharp bending, hug sheave grooves, and wind snugly and smoothly on the drums. Tuffy is so designed to resist drum crushing caused by rope cross-overs. What's more, no complicated specifications are necessary when you order Tuffy! Just ask for Tuffy Scraper Rope and specify diameter and length.

## Tuffy DOZER ROPE

**"A Reel of Tuffy Dozer Can Save Up To 300%."**

Wire rope gets extra-rough service on a dozer, and Tuffy Dozer Rope was specially created for the job. But Tuffy engineers went even further . . . they designed a reel to mount on the dozer and help you stop rope wastage. When rope is cut or crushed on the drum, you just feed through enough from the reel to replace the damaged part. You save the 40' to 50' that would normally be thrown away! Users report an increase in service of up to 300%! And you'll find replacement takes less than *half* the time usually needed! Tuffy Dozer is a special ½" wire rope, available in 150' reels. Use Tuffy on your Dozer —and *save!*

SEND FOR THESE FREE FOLDERS

**union Wire Rope corporation**

*Specialists* *In Wire Rope and Braided Wire Fabric*

**2270 Manchester Ave., Kansas City 3, Mo.**

Please send me the illustrated folders I have checked below:

☐ Tuffy Dragline ☐ Tuffy Scraper Rope

☐ Tuffy Dozer Rope ☐ Tuffy Slings

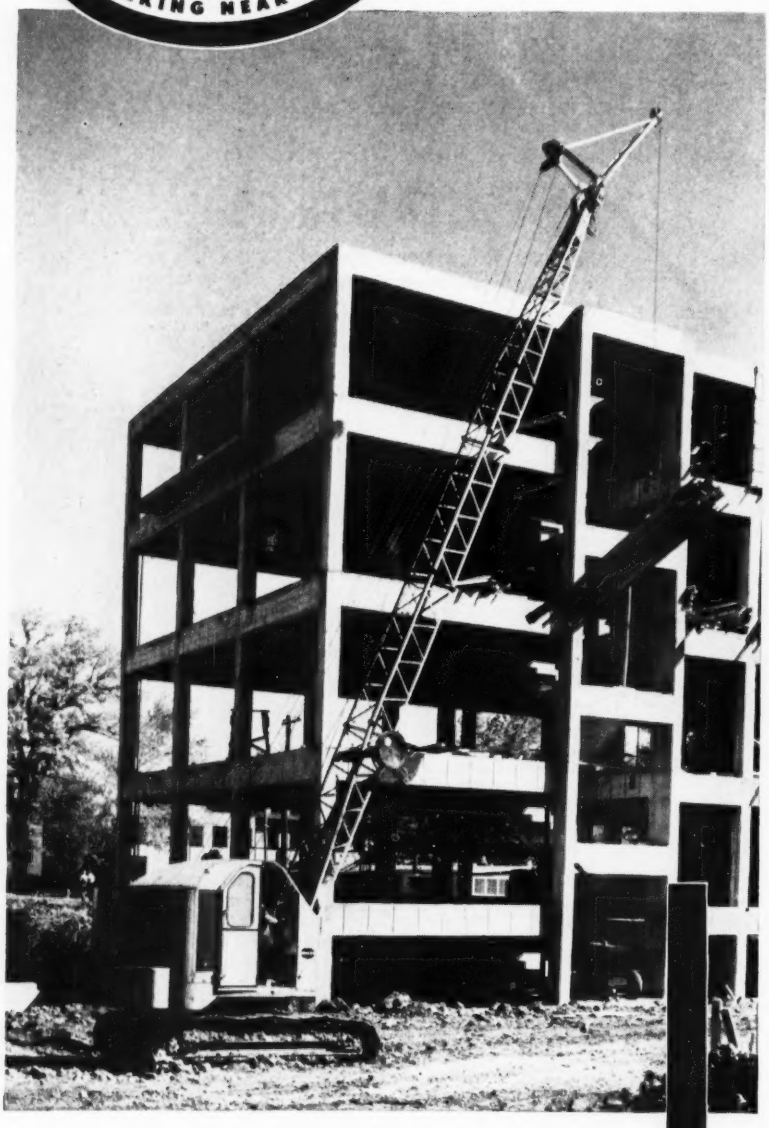
Firm Name_____

By_____ Title_____

Address_____ City_____ State_____

THERE'S AN INSLEY WORKING NEAR YOU

ON A CONSTRUCTION PROJECT



The Insley Line includes excavators and cranes, 5 to 30 ton capacity—rubber or crawler mounted — gasoline, diesel or electric powered. There's an Insley working near you on a construction project.

INSLEY MANUFACTURING CORP. • INDIANAPOLIS
wholly owned subsidiary
THE MAXI CORPORATION, LOS ANGELES

JOB TALK . . . Continued from page 12

sonry construction illustrates good practice in the use of salamanders. These HY-LO heaters are set on tile blocks for stability and raise them above combustibles that may be scattered inadvertently near by. They are spaced to supply ample heat where work is being done around walls and ceiling, in spite of open window areas that let in the cold. Heat from portable heaters on the floor below to heat forms from the bottom make it possible to pour a floor slab of concrete and control curing in winter. (See also article on portable heaters beginning on page 66.)

## Nail to Concrete

Section of plank is anchored to a concrete surface quickly with a Ramset Jobmaster powder-actuated driver. The anchored timber then becomes the end support for batten boards nailed to it to give side support to forms for concrete foundations. The process is faster and cheaper than piling sandbags, has a big potential for foundations, curbings, highway center strips and similar work. This operation is taking place at Cleveland Hopkins Airport.

## Winding Tool Speeds Curing Paper Handling

Sisalkraft concrete curing paper is laid and picked up again "with the greatest of ease" with a pair of shop-built, hand-held winding handles designed by Merle Miller, shop foreman for Serafini Construction Co., Binghamton, N. Y.

Miller got his idea for the tool while watching workmen wrestling with rolls of paper when covering

*(Continued on page 21)*

# Why Sellin Bros. are sold on **CAT*** performance

Harold and Roy Sellin, Hawley, Minn., are strong for the D8 Tractor and No. 80 Scraper. They say: "For success in earthmoving, buy Caterpillar!"

Building a mile of farm-to-market road near Hitterdal, Minnesota, Sellin Bros. made excellent time in spite of wet, boggy conditions. Their equipment on this job included four Caterpillar D8 Tractors and two No. 80 Scrapers.

The big units averaged 6 round trips per hour, carrying loads up to 22 cubic yards of heavy material, over a haul distance of 500 feet. Together the scrapers moved about 3,000 cubic yards in a 12-hour day. The earth handled was black loam and heavy, wet clay, and part of the haul was through standing water.

Here's what Harold and Roy Sellin say about their machines: "Caterpillar equipment is the best made, and durability is the outstanding feature. The No. 80 Scrapers load much faster and easier than other makes of machines, and production is higher."

When you're buying a scraper, look at your *last* cost *first*. Compare the Cat No. 80 or the new No. 90 with any other make on cost per yard. Then figure the cost of repairs and down time. You'll find Caterpillar Scrapers not only *outperform* but *outlast* other makes, in every kind of going.

Your Caterpillar Dealer will give you a demonstration right on your own job—*prove* that the big yellow rigs will produce more, in less time, at lower cost. Call him today!

Caterpillar Tractor Co., Peoria, Ill.

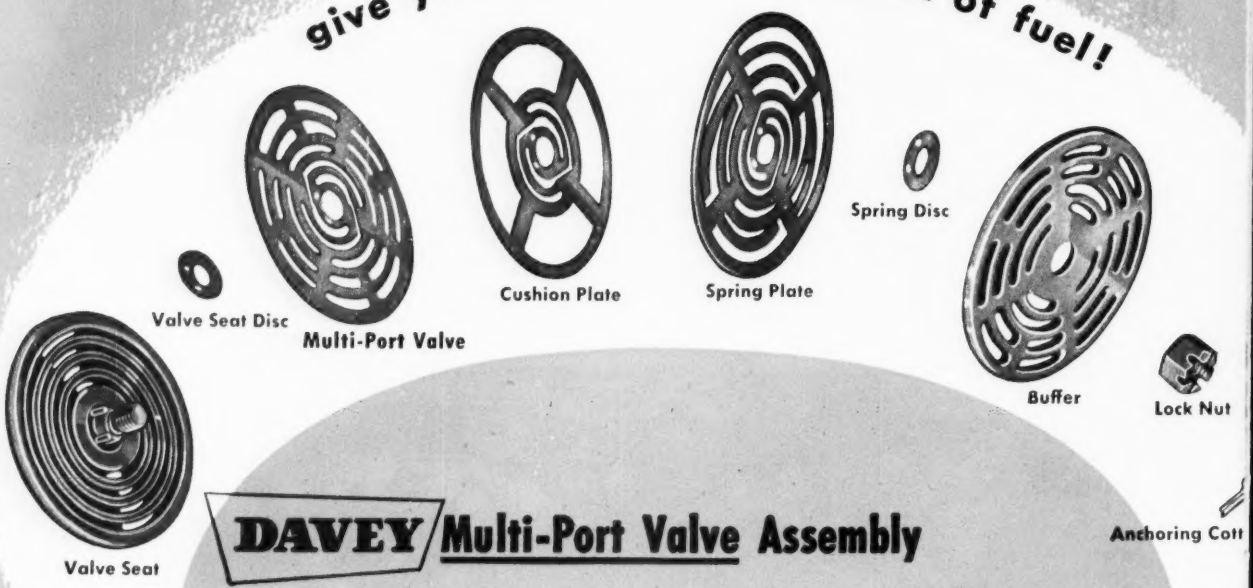
**CATERPILLAR***

*Both Cat and Caterpillar are registered trademarks - ®

**NAME THE DATE... YOUR DEALER WILL DEMONSTRATE**

# DAVEY COMPRESSORS with Multi-Port Valves

## give you more air per gallon of fuel!




## DAVEY Multi-Port Valve Assembly

Ask any owner of a new **Multi-Port Valve** Davey. He'll tell you that he is getting more air from less fuel than he ever believed possible.

Davey's new **Multi-Port Valves** set new standards of economical compressor operation. In addition, they never carbon or foul . . . do not require replacement, assure constant full air volume, keep tools operating at peak efficiency.

A-7218

**Super Chief Model 210 is one of the most popular Daveys . . . possesses tremendous reserve power . . . is equipped with large air tool storage boxes. It is lighter in weight and possesses smaller over-all dimensions than any other standard 210 c.f.m. unit available today.**

**DAVEY**

*pioneers of "air-cooled air"*

Ask your Davey Distributor for data on standard 60 to 600 c.f.m. Davey portable and industrial compressors; "Auto-Air" (truck-mounted) compressors; Mobile Machine Shops and Field Service Units.

**DAVEY COMPRESSOR CO. • KENT, OHIO**

JOB TALK . . . Continued from page 18

freshly laid slabs of concrete on highway construction. The common method is to lay the roll of paper across the slab and unroll it with one man at each end. The unrolling can result in bumps in the finished surface unless extra precautions are taken. When removing the paper, it is rolled laboriously on a 2x3-in. pole.

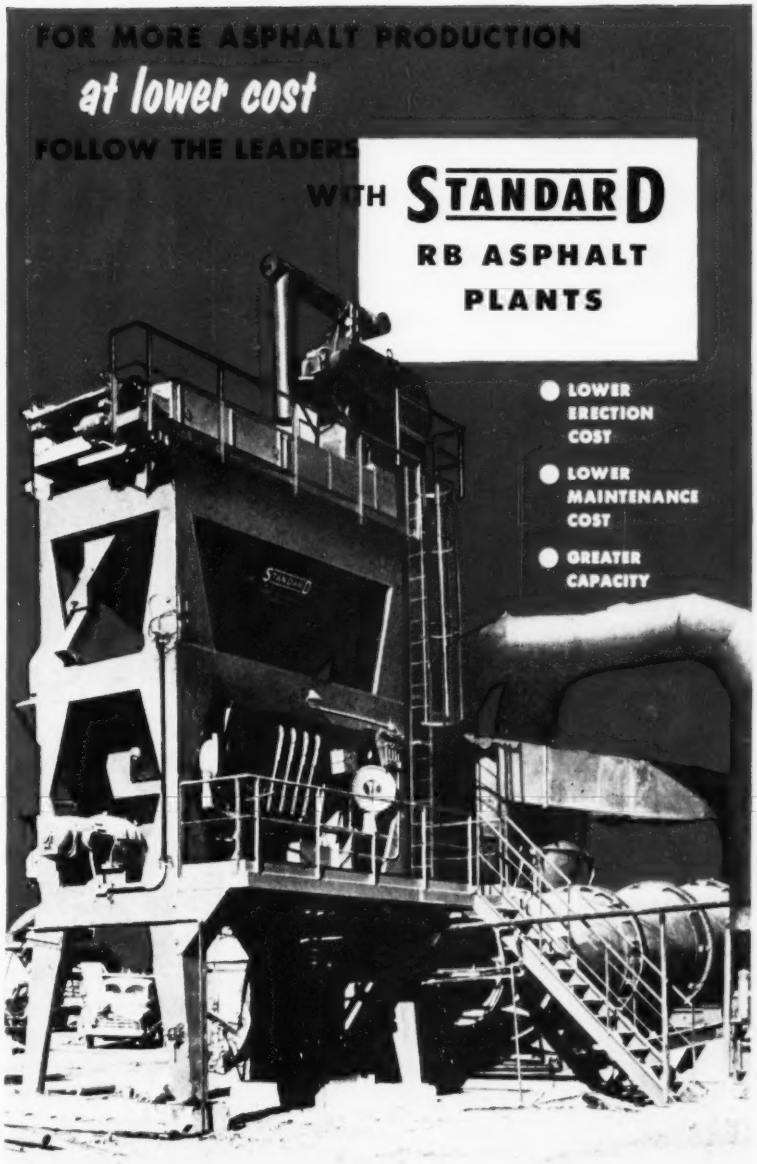
With the new method, two men lift a roll of paper, insert the ends of the wood pole into the winding tools and walk off, letting the paper unwind as they go. To pick up paper after the concrete has cured, they roll up a strip quickly and neatly by turning cranks as they walk along.

The business end of the winder is rectangular and hollow, to accommodate the wood poles. It is connected to a 2-ft shaft with a crank at the opposite end, supported by two bearings inside a steel tube.

Miller, shown holding his invention, has applied for a patent.

## Busy Truck Mixers

Eight Challenge 6½-yd truck mixers on Cook Bros. carriers recently delivered 742 yd of concrete during one 8-hr shift in Los Angeles on a round-trip haul of 4.8 mi through city traffic. The steady delivery was maintained by Consolidated Rock Products Co. for a three-level parking garage being built by T-S Construction Engineers, Inc. Fast delivery usually depends upon fast unloading. These trucks could unload immediately upon arrival into hoppers. Concrete was drawn from the hoppers into power buggies for placing in the structure.


H. B. ZACHARY COMPANY

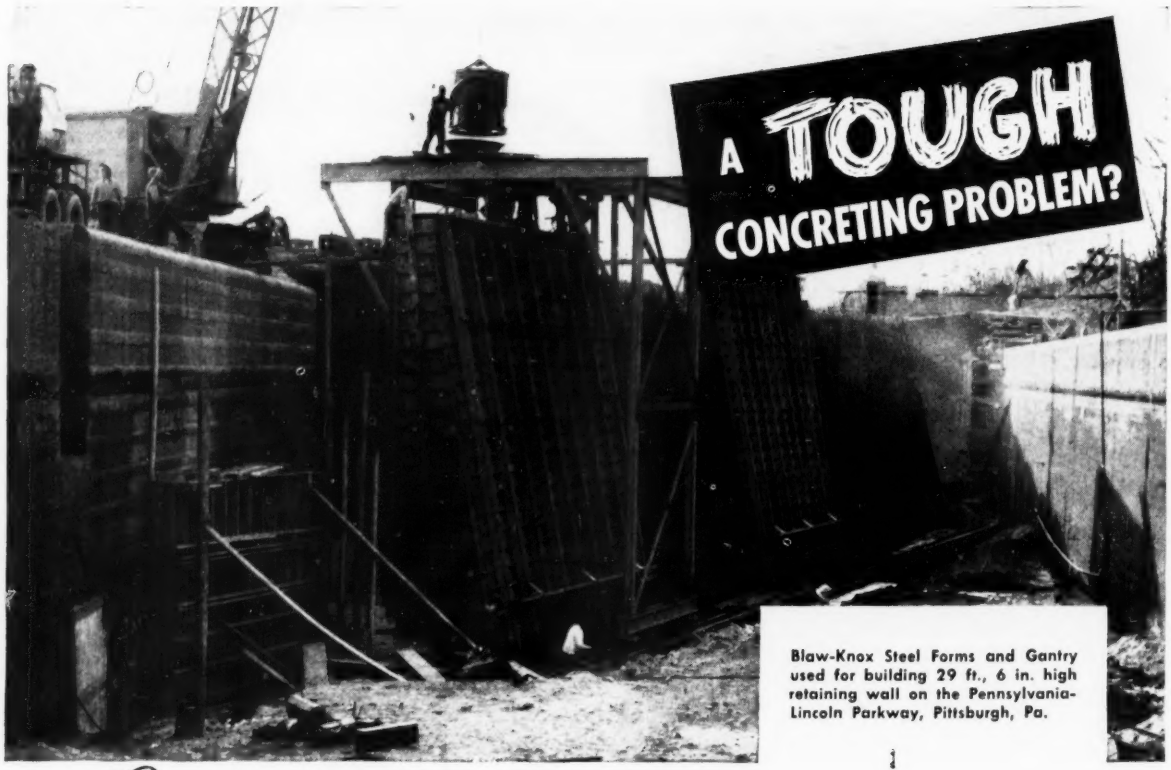
CHOOSES STANDARD FOR *Profits*

Ruggedly built for years of heavy service and low cost operation. The complete STANDARD plant is constructed of compact, individual units for easy, cost saving erection, dismantling and transportation. For greater asphalt production and rock bottom maintenance costs . . . for increased PROFIT, follow the leaders across the nation — STANDARD-IZE with an RB Asphalt plant. Parts warehoused in New York and Los Angeles.

*500 to 6,000 lb. batch capacities. Write for descriptive literature.*

STANDARD

STANDARD STEEL CORPORATION




Blaw-Knox Steel Forms and Gantry used for building 29 ft., 6 in. high retaining wall on the Pennsylvania-Lincoln Parkway, Pittsburgh, Pa.

# *Consult* BLAW-KNOX ENGINEERS for the low-cost answer

**WRITE FOR BULLETIN 2035**

**Get complete details about Blaw-Knox Steel Forms and the consultation service that is available to any contractor without obligation.**

TAKE advantage of the Blaw-Knox consultation service *before* your plans are drawn or blueprints made—solve your concreting problems before you have them.

Blaw-Knox has the skill and experience of more than 40 years of building Steel Forms for big construction projects. An unusual concreting problem to you may already have been solved by Blaw-Knox engineers who are trained to get to the core of a problem and find a simple, less costly method of solving it. They will recommend the Blaw-Knox Steel Forms designed to fit your job and suggest simplified operating procedures to save you time and money.

*Before* you start to plan your next job, write, wire or phone for information. Call on the Blaw-Knox consultation service in the *preliminary planning* stage.

**STEEL FORMS**

# BLAW-KNOX

**BLAW-KNOX COMPANY**
**BLAW-KNOX EQUIPMENT DIVISION**
**2086 Farmers Bank Building**
**Pittsburgh 22, Pa.**

BLAW-KNOX

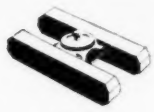
## Shovel-Crane Performance Depends a Lot on the Crawler

The crawler on a shovel, crane, dragline, clamshell, or hoe contributes much more to the operation of the machine than just transportation. It is important in many ways to over-all performance.

In the first place, the actual size of the crawler should be related to the type of job being performed. For example, a shovel that operates on firm footing with limited travel, such as in a quarry, can function properly with medium crawler length and tread width. The same shovel moving frequently on soft ground would need wider treads and a longer crawler to give lower ground bearing pressures and consequently better soft-ground flotation.

*STANDARD*

Dragline and crane work generally require the longest and widest crawlers with the widest treads of all. Working with a long boom at a low angle tends to make the front end of any machine "nose-in", particularly when on soft ground. An extra-long crawler with wide treads to give more "footing" and lower ground pressures can reduce this considerably.



*LONG*

Extra-long, extra-wide crawlers are sometimes used on draglines and more often on lifting cranes to give additional stability and thus, increased lifting capacities.

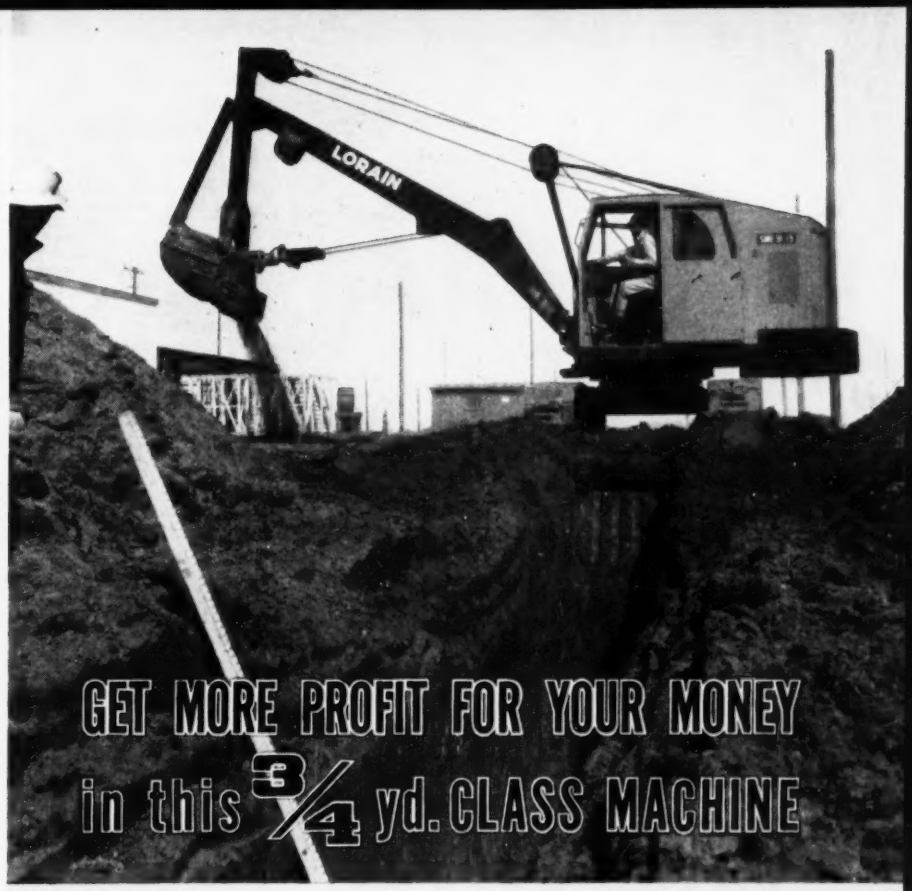
Crawlers that can travel in either direction and have 4-way tread-travel locks operated by power from the cab are more efficient and safer. These allow the machine to travel forward or "move-up" into the job as necessary; whereas, any rearward thrusts, due to digging action of the machine, work against locked treads to hold the crawler in position. It also eliminates backsliding on uphill work or travel.

*LONG-WIDE*

Crawlers that can be steered with the turntable in any position of swing save time on the job — and if all crawler controls are operated from the turntable cab, greater and faster maneuverability is obtained.

The crawler can make the difference between profit and loss on a job. Get the right one to fit your needs.

(Advertisement)




# GET MORE PROFIT FOR YOUR MONEY in this 3/4 yd. CLASS MACHINE

**The only reason for buying a shovel-crane is to make a profit. This means it has to be reasonable in first cost, fast and easy of operation, long-lasting, easily convertible to fit your needs, easy to maintain and repair and served by a widespread national distributor organization that can give you prompt help in emergencies wherever your jobs may be. Lack of any one of these factors can *decrease* your profits.**

**Because we know you *must* profit before we do, we *make sure* you get all of these advantages when you buy a ¾ yd. Lorain TL-25 — or any other Lorain — shovel, crane, clamshell, dragline or hoe. Trenching, digging, lifting, any need you have in the ¾ yd. class can be filled with a Lorain TL-25. We can prove the TL-25 to be a profit maker. Get the facts from your nearby Lorain Distributor.**

***SEE* WHAT MAKES THE "TL-25" TICK!**

*NEW! The first book of its kind in the shovel-crane field — printed in color on transparent acetate so you can "X-ray" the design and construction of each major component. See the "TL-25" "Packaged Component" assembly — how each goes together, step by step. Copies sent at request on your letterhead.*

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**WIN MORE BIDS WITH THE . . .**

**THE THEW SHOVEL CO.**
*Lorain, Ohio*

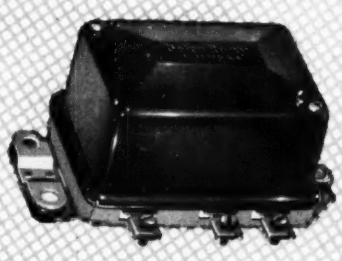
**THEW LORAIN TL 25**

# *Right for the Job!*

## DELCO-REMY EXTRA-OUTPUT GENERATORS AND MATCHING REGULATORS

**(Medium Duty—40 and 50 Amperes)**

D.C. GENERATOR



REGULATOR

Delco-Remy extra-output generators are an economical answer to the electrical needs of contractors' pick-up or panel trucks . . . other vehicles with additional lights, two-way radios, special electrical equipment . . . in medium-duty service. For a field-type operation, Delco-Remy extra-output generators offer the triple advantages of low initial cost, simple installation and economical maintenance.

DELCO-REMY 40-AMP. GENERATOR has low cut-in . . . charges at engine idle from 11 to 17 amperes . . . attains full output at 18 mph when using a three-inch pulley.

DELCO-REMY 50-AMP. GENERATOR has slightly higher cut-in, about 9 mph . . . attains full output at 19 mph . . . for vehicles customarily operating at higher speeds, with minimum of slow driving.

See your nearest United Motors wholesaler for further information and application data.

A GENERAL MOTORS PRODUCT — A UNITED MOTORS LINE

*DISTRIBUTED BY WHOLESALERS EVERYWHERE*

**DELCO·REMY**

Division, General Motors Corporation
Anderson, Indiana

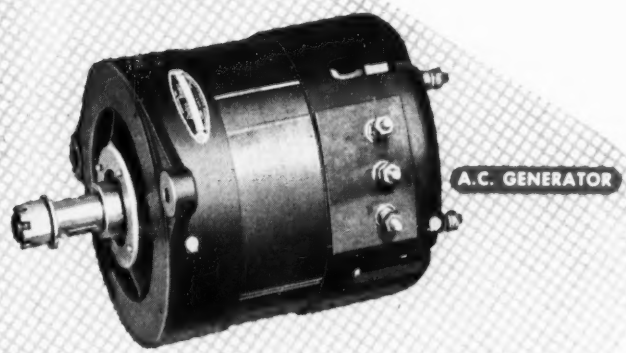
WHEREVER WHEELS TURN OR PROPELLERS SPIN

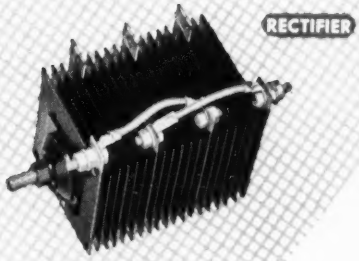
*Right for the Job!*

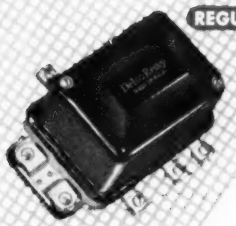
*New*

# DELCO-REMY ALTERNATING CURRENT GENERATOR

## (ALTERNATOR)




### A.C.-D.C. charging system for vehicles with extra-heavy electrical loads

Here's the answer for "problem" vehicles — Delco-Remy's new long-lived A.C.-D.C. charging system! It's specifically designed to meet the *extra*-heavy electrical demands of contractors' trucks and other vehicles equipped with floodlights, two-way radio, or any extra electrical units. Ample current reserve picks up discharged battery quickly in operation.

With output ranging from 30-40 amperes at engine idle to 90 amperes at higher engine speeds, the new Delco-Remy A.C.-D.C. charging system meets all electrical needs under the toughest operating conditions. Included in the new system is the A.C. generator (alternator), a matching regulator for accurate voltage control and a rugged, dependable dry-plate rectifier which converts generator A.C. output to direct current.

Application packages for popular makes of cars and trucks are now available. The conversion job is simple, complete and profitable. For details and application data, see your nearest United Motors wholesaler.

A GENERAL MOTORS PRODUCT — A UNITED MOTORS LINE

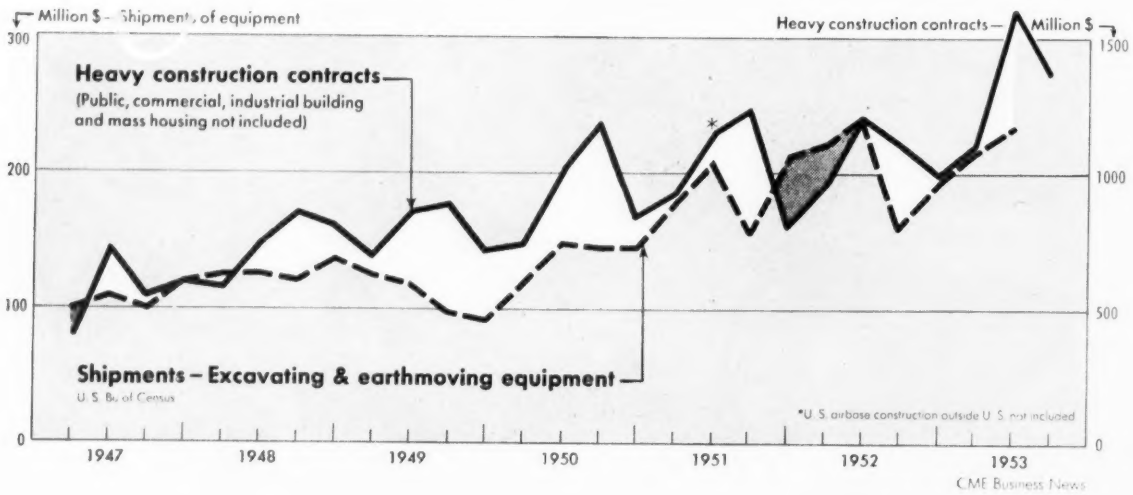
*DISTRIBUTED BY WHOLESALERS EVERYWHERE*

**DELCO-REMY**

Division, General Motors Corporation
Anderson, Indiana

WHEREVER WHEELS TURN OR PROPELLERS SPIN

# *It's Your Business . . .*




## Equipment Shipments at Near-Record in '53

CONSTRUCTION EQUIPMENT SHIPMENTS in the first six months of '53 were close to the record set in the first half of '52. U. S. Dept. of Commerce figures show the dollar value of '53 shipments topped $451 million, about 3½% under the all-time high of $467 million shipped in '52.

Setting new highs in '53 are power shovels and cranes, up 3%, tracklaying tractors, up 10%, machinery for mounting on tractors, up 5%, and portable blast hole drills, up 41%.

On the down side, road construction and maintenance machinery shipments are off 21% from '52, wheel-type tractors are down 38%, and off-highway trucks are 23% lower.

While equipment shipments are at a near-record level in the first half of '53, they have not kept pace with the sharp rises in heavy construction volume (see chart). Contracts awarded for heavy non-building construction climbed to $2.7 billion in the first six months of '53 for a 24% gain over last year, as reported by McGraw-Hill's *Construction Daily*. Construction volume continued to show about the same percentage increase over '52 during the third quarter of this year, and pushed the nine-month total to a new all-time high of $4.1 billion. Equipment shipments for the third quarter are not yet available.

State and municipal construction is playing the key role in the record volume of non-building construction in '53.

In the first 43 weeks, highway contracts are up 20% over '52, bridge awards are 70% higher, sewerage volume is up 49% and waterworks is 7% ahead.

To finance this non-building construction, state and local governments sold a record-breaking $1,808 million in bonds so far this year, a jump of 60% over the volume of bond financing in '52. This heavy demand for new construction came during a tight bond market and the result was a 25% increase in the cost of borrowing, as measured by Standard & Poor's average yield for high grade municipal bonds.

However, after hitting in July the highest level since the 1930's, municipal bond yields dipped in August and again, slightly, in September. While the average interest cost in September was 23% above the September '52 rate, it is encouraging that the rates are no longer rising and may actually drift lower in the next few months. This could be an important factor in maintaining state and municipal construction at a high level in '54.

## Construction Backlog Levels Off

Heavy construction backlog leveled off in September at $72.9 billion, slightly under the all-time high reached in August. September was the first month since December '48 that the backlog dipped below the previous month and reflects a slowdown in new proposed work, both public and private.

While leveling off in September, the backlog is almost 9% higher than a year ago, despite the larger volume of work moving out into contract this year. Projects estimated to cost $11.8 billion were proposed in the first nine months of '53, 5% more than in '52. Private proposed work showed a slightly bigger gain than public works in the same period.

All of the increase in the total backlog in the 12 months since September '52 has been in private and state and municipal work. The private backlog climbed 11% to $29.7 billion on September 30, 1953, while the state and municipal backlog rose 10% to $30.5 billion. The federal backlog dipped slightly over the same period and now stands at $12.7 billion.

*(Continued on page 28)*

# For dig-power it's CAT* Engines

WHEN there's Caterpillar power behind the bucket you can look for real production. The shovel or backhoe will be working—not standing idle while somebody tinkers with the engine.

This Caterpillar-powered Bucyrus-Erie 22-B is one of a pair owned by Calandro Construction Co., Scarsdale, N. Y. It's working on a 14,000-yard excavating job for foundations of the new Mamaroneck High School. Whether it's trenching with a 1-yard backhoe or loading trucks with a ¾-yard dipper, the Caterpillar D318 Engine puts out plenty of digging power.

John Calandro, Jr., says: "Both of our Caterpillar-powered shovels as well as our D8 Tractor have given very satisfactory service over the many hours they have been operated."

You get economy as well as dependability when Cat Engines power your equipment. They operate without fouling on No. 2 furnace oil. And they're sturdily built to keep working with a minimum of down time.

Leading manufacturers can supply Caterpillar Engines in the machines they build, with 12 sizes available, up to 500 HP. For replacement power see your Caterpillar Dealer. He backs every product he sells with reliable service and a full stock of genuine parts.

Caterpillar, Peoria, Illinois.

**CATERPILLAR***

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**SPECIFY CAT POWER FOR HIGH-PROFIT PRODUCTION**

You Find RED SEALS AT WORK

Wherever There's Work to be Done!

Continental Red Seal industrial power is getting the call for more and more of the world's tough jobs. Here are two Red Seal M-330's driving pumps on a project where they had to operate almost continuously for a period of several weeks. In-built stamina—fine result of more than 50 years' experience in engineering and precision manufacture—has made Red Seals first choice for assignments where the power plant really has to take it—where work is tough and rest periods few and far between.

LOOK FOR THE RED SEAL TRADEMARK

• • •

EMBLEM OF DEPENDABILITY ON LEADING MAKES OF:

Pumps . . . Compressors
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Continental Motors Corporation
MUSKEGON • MICHIGAN


IT'S YOUR BUSINESS . . .

Continued from page 26

## Prices Up on Cranes and Tractors

The BLS index of manufacturers' prices of power cranes moved up 0.3% in September, after leveling off in August. The new index is 129.4 based on average prices in 1947-49 = 100, and reflects a 4.4% price rise since September '52. The tractor price index rose 0.9% in September to 139.3, up 6.9% from a year ago.

All other items in the index remained unchanged in September. Compared to September '52, they show increases of 4.4% for mixers and pavers, 3.7% for air tools, hand held, 3.7% for specialized construction machinery, 2.1% for machinery for mounting on tractors, and 0.2% for scrapers and graders. The index for portable air compressors was unchanged from a year ago.

## SOME BIG CONTRACT AWARDS OF THE MONTH

**Fruin-Colnon Contracting Co.,** 1706 Olive St., St. Louis 3, Mo., and **Peter Kiewit Sons Co.,** 1024 Omaha National Bank Bldg., Omaha, Neb. Records Center, including 6-story main building, 1-story cafeteria, assembly hall and other auxiliary buildings, at Overland, Mo., for U. S. Engineers, 601 Davidson Bldg., Kansas City, Mo., $12,574,850.

**Nello L. Teer Co.,** P.O. Box 1131, Durham, N.C. Approximately 30 mi of paving, including gutters, toll plaza and miscellaneous items in Raleigh and Fayette Counties for the West Virginia Turnpike Comm., 1340 Wilson St., Charleston 5, W. Va., $6,947,128.

**H. K. Ferguson,** 1783 E. 11th St., Cleveland, Ohio, and **Morrison-Knudsen Co.,** 319 Broadway, Boise, Idaho, underground parking garage with park above Mellon Square Park, Pittsburgh, for Pittsburgh Parking Authority, City County Bldg., Pittsburgh, $4,000,000.

**Union Building & Construction Corp.,** 631 Main Ave., Passaic, N.J., grading, drainage, paving, bridges on 1.894 mi of Garden State parkway in Essex and Passaic Counties for New Jersey Highway Authority, State Highway Dept. Office Building, 1035 Parkway Ave., Trenton, N.J., $2,588,381.

**Fort Pitt Bridge Works,** Wood St., Pittsburgh, Pa., superstructure for 1-story steel frame cold strip mill.

*(Continued on page 32)*

# don't let HEAT

## RUIN YOUR FLYWHEELS AND PRESSURE PLATES

## Install Velvetouch Matched Facing Sets

Whether you're having trouble with the master facings on your tractors or the clutches in your trucks, you'll find Velvetouch Matched Facing Sets keep equipment out of the repair shop and on the job. Because Velvetouch gives you FOUR controlled friction surfaces instead of two... gives you positive protection against heat-checked flywheels and pressure plates!

In addition, Velvetouch Matched Facing Sets insure increased clutch capacity, for they DOUBLE the controlled friction area you get with conventional plates. And with Velvetouch, you can reclaim old flywheels and pressure plates that have already been heat-damaged, and put them back into service . . . better than ever!

Detailed literature available now. For further facts about Velvetouch Matched Facing Sets . . . see your supplier, call our nearest branch, or write us direct.

**THE S. K. WELLMAN CO. • 200 EGBERT RD. • BEDFORD, OHIO**

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** WASHINGTON—1101 Vermont Ave., N. W., Washington 5, D. C.

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* SALES OFFICE AND WAREHOUSE ** SALES OFFICE

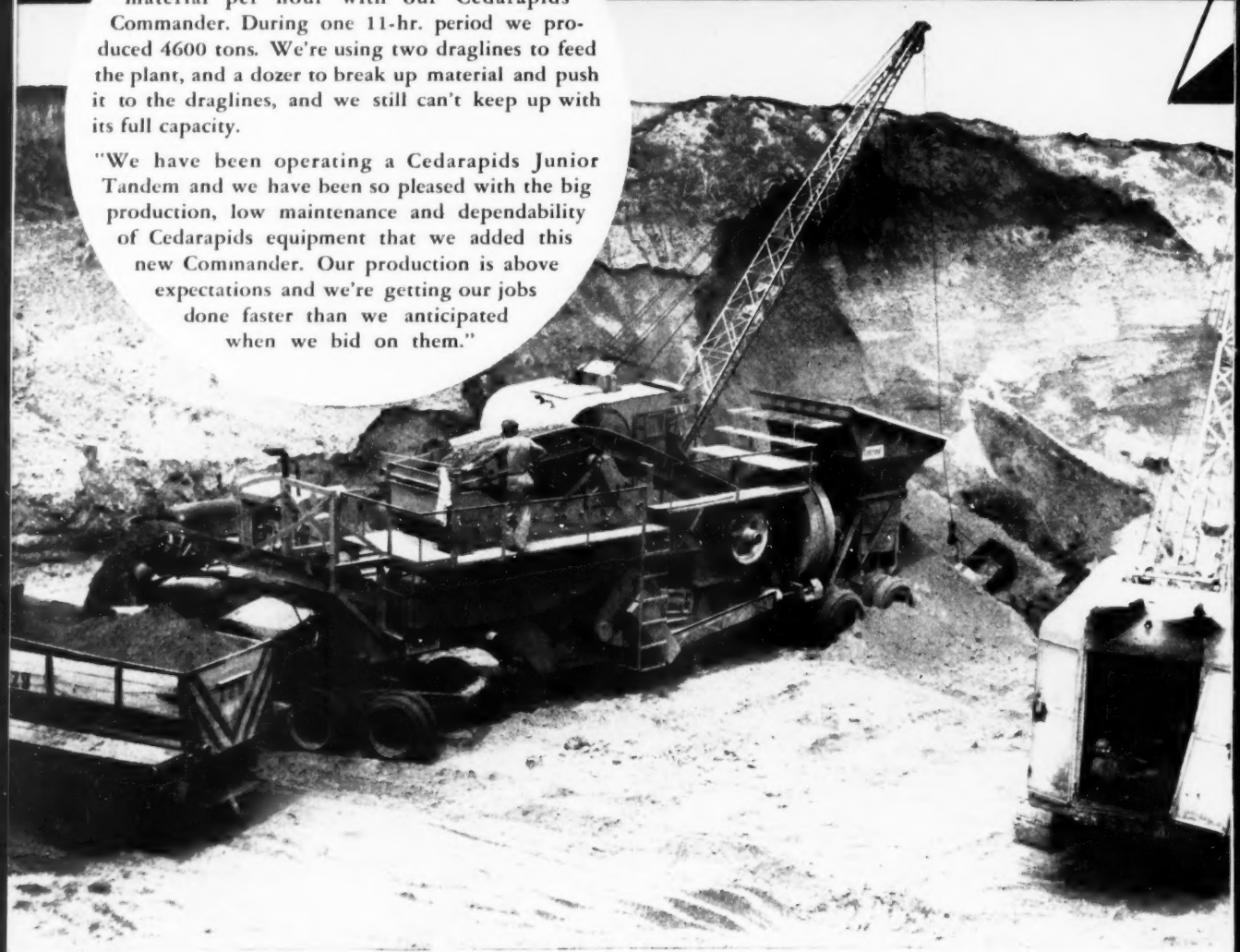
# CEDARAPIDS

# *Makes More Money*

**WHETHER IT'S A BIG VOLUME AGGREGATE PRODUCTION JOB . .**

H. R. Maudlin, Partner in Maudlin Construction Company of Webster City, Iowa says, "We're getting between 300 and 400 tons of 1¼" material per hour with our Cedarapids Commander. During one 11-hr. period we produced 4600 tons. We're using two draglines to feed the plant, and a dozer to break up material and push it to the draglines, and we still can't keep up with its full capacity.

"We have been operating a Cedarapids Junior Tandem and we have been so pleased with the big production, low maintenance and dependability of Cedarapids equipment that we added this new Commander. Our production is above expectations and we're getting our jobs done faster than we anticipated when we bid on them."



**THE IOWA LINE** *of Material Handling Equipment Includes:* ROCK AND GRAVEL CRUSHERS • BELT CONVEYORS • STEEL BINS • VIBRATOR AND REVOLVING SCREENS • UNITIZED ROCK AND GRAVEL PLANTS • FEEDERS • PORTABLE POWER CONVEYORS • PORTABLE AND STATIONARY STONE, GRAVEL AND SAND PLANTS • REDUCTION CRUSHERS • BATCH TYPE AND VOLUMETRIC TYPE ASPHALT PLANTS • DRIERS • DUST COLLECTORS HAMMERMILLS • WASHING PLANTS • VIBRATING SOIL COMPACTION UNITS • DOUBLE IMPELLER IMPACT BREAKERS

# EQUIPMENT

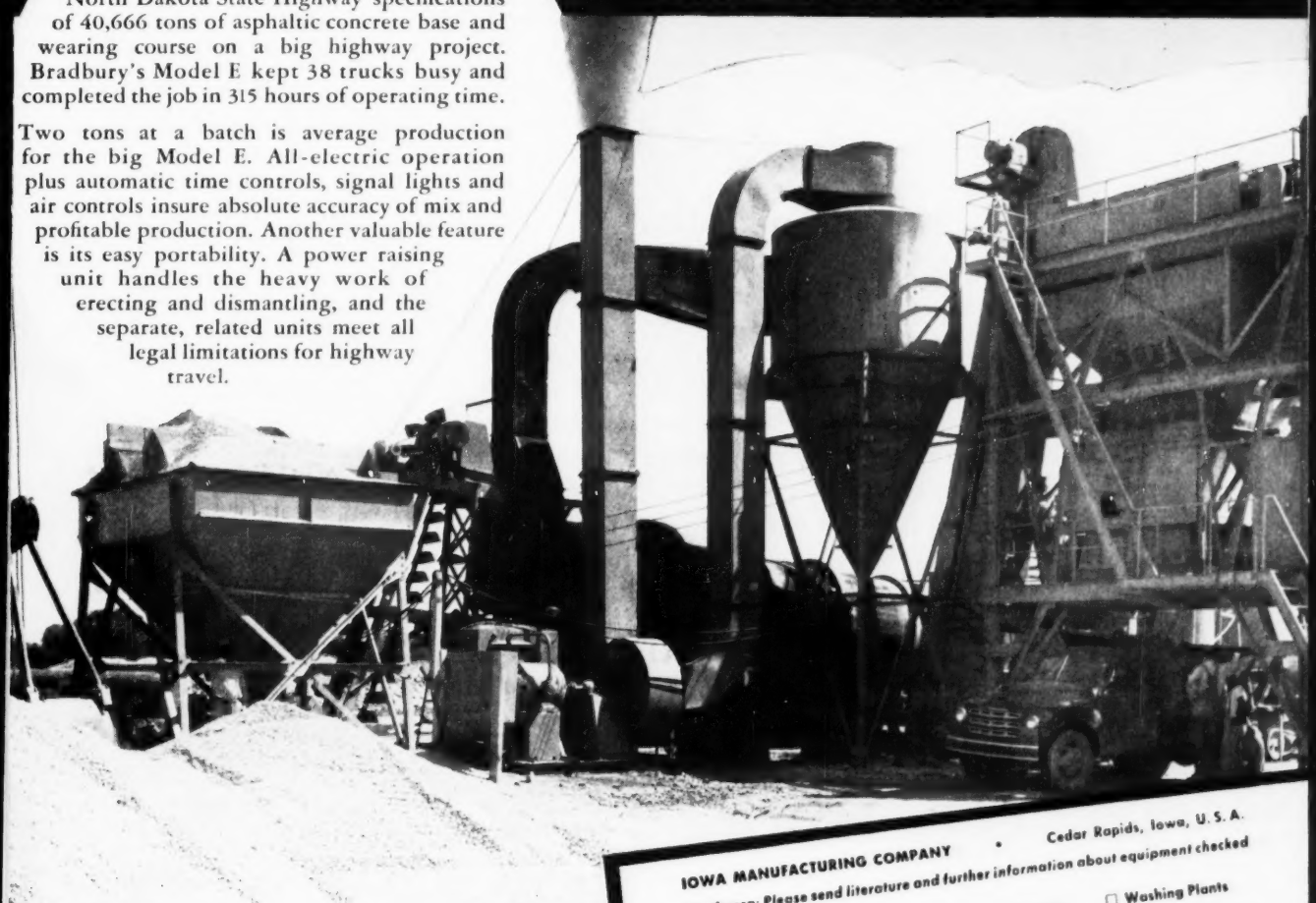
*for you!*

IN every State and Province you will find Cedarapids equipment helping to build better and lower cost highways and airports. Whether your job is tough or easy, unique or run-of-the-mill . . . you'll find Cedarapids equipment and Cedarapids know-how ready to solve it with complete plants or specially designed outfits, engineered to increase your production and *profits.* Your Cedarapids distributor will gladly help you meet your specific conditions . . . call him today.

## . . OR A BITUMINOUS MIXING JOB *ANYWHERE!*

P. A. BRADBURY CONSTRUCTION CO., of Aberdeen, South Dakota used a big Cedarapids 4000-lb. Model E to meet North Dakota State Highway specifications of 40,666 tons of asphaltic concrete base and wearing course on a big highway project. Bradbury's Model E kept 38 trucks busy and completed the job in 315 hours of operating time.

Two tons at a batch is average production for the big Model E. All-electric operation plus automatic time controls, signal lights and air controls insure absolute accuracy of mix and profitable production. Another valuable feature is its easy portability. A power raising unit handles the heavy work of erecting and dismantling, and the separate, related units meet all legal limitations for highway travel.



**IOWA MANUFACTURING COMPANY**
**Cedar Rapids, Iowa, U. S. A.**

IOWA MANUFACTURING COMPANY • Cedar Rapids, Iowa, U. S. A.

Gentlemen: Please send literature and further information about equipment checked

☐ Gravel Plants ☐ Rock Plants ☐ Special Plants
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☐ Washing Plants ☐ Bituminous Mixing Plants

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Company _____

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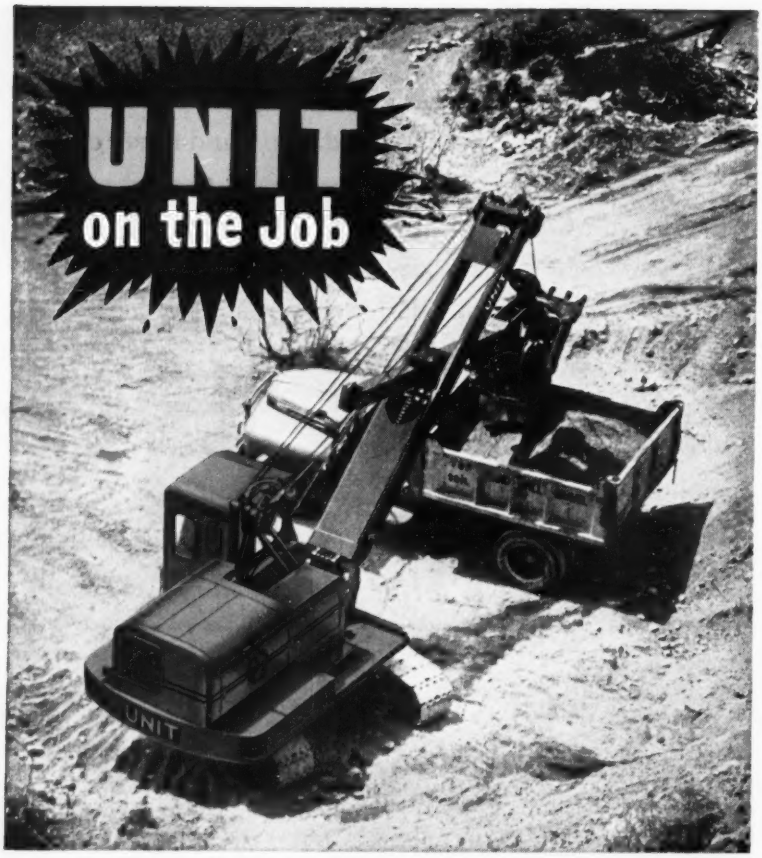


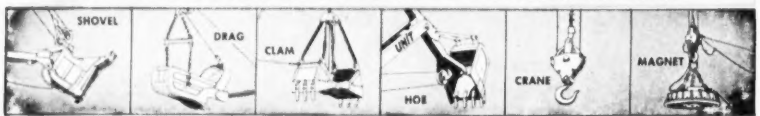

## SWING SPEED makes PAY LOADS!

Here's a UNIT ½ Yard Shovel doing a PRODUCTION DIGGING JOB in a gravel pit. UNIT owners like the ease of operation and the FULL VISION CAB for complete visibility. They also like the sturdy construction and the many mechanical features, plus the ECONOMICAL PERFORMANCE and LOW UP-KEEP which all add up to EARNING POWER. Why not investigate what UNIT can do for you — on YOUR next excavating and material handling job?

**SEE FOR YOURSELF:** *Let us send you our novel TV Brochure. It illustrates the complete UNIT line.*

**UNIT CRANE & SHOVEL CORPORATION**
6305 WEST BURNHAM STREET • MILWAUKEE 14, WISCONSIN, U. S. A.

**½ or ¾ YARD EXCAVATORS...CRANES UP TO 20 TONS CAPACITY**
**CRAWLER OR MOBILE MODELS . . . GASOLINE OR DIESEL**




**All Models Convertible to ALL Attachments!**


## IT'S YOUR BUSINESS . . .

Continued from page 28

Brackenridge, Pa., for Allegheny Ludlum Steel Corp., Oliver Bldg., Pittsburgh, Pa., $9,000,000.

**American Bridge Co.,** Div. U.S. Steel Corp., 208 S. La Salle St., Chicago, Ill., superstructure, and **Cascade Contractors** and **Austin Construction Co.,** Terminal Sales Bldg., Portland, Ore., Substructure of Columbia River bridge at McNary, Ore., for State Highway Comm., Court House, Pendleton, Ore., $2,186,913 and $676,-307, respectively.

**Ross & Powers Construction Co.,** Billings, Mont.; **Associated Pipe Line Contractors,** 3272 Westheimer St., Houston, Tex.; **Eastern Pipeline Contractors,** Mercantile National Bank Bldg., Dallas, Tex., and **Engineers Ltd. Pipeline Co.,** 2040 Navajo St., Denver, Colo., 537 mi 10-in. oil line from Billings, Mont., to Spokane, Wash., for Continental Pipe Line Co. and Associated Companies, Billings, Mont. $20,500,000.

**Walsh Construction Co.** and **C. J. Langenfelder & Sons, Inc.,** 1 East 43d St., New York City 17, New York State Thruway, Catskill section (Harriman-Newburgh) Orange Co., for New York State Bureau of Contracts and Accounts, The Governor Alfred E. Smith Bldg., Albany, N. Y., $14,-816,126.

**Bechtel Corp.,** 220 Bush St., San Francisco, Calif., general contract for refinery at Anacortes, Wash., for Shell Oil Co., 1219 Westlake Ave., N., Seattle, Wash., $75,000,000.

**Joseph Miele Construction Co., C. Salvatore & Sons, George M. Brewster & Son, Inc., Terminal Construction Corp., La Ferra Construction Co., Inc.,** 275 Fort Lee Rd., Bogota, N.J. East and West Side intercepting sewers and treatment plants, Jersey City, N.J., for Jersey City Sewerage Authority, City Hall, Jersey City, $29,806,552.

**Morrison-Knudsen Co., Inc.,** and **J. A. Terteling & Sons, Inc.,** 319 Broadway, Boise, Idaho, extending apron, strengthening runway, taxi-ways and apron, airfield lighting and utilities systems, Mountain Home Air Force Base, Mountain Home, Idaho, for U.S. Engineers, City-County Airport, Walla Walla, Wash., $6,112,113.

**Fred J. Early Co., Inc.,** 22124 S. Vermont Ave., Los Angeles, Calif., and **Stolte, Inc.,** 8451 San Leandro St., Oakland, Calif., sewage treatment plant trunk lines, a disposal system at Air Force Plant 42, Palmdale, Calif., for Lockheed Aircraft Corp., 2555 Hollywood Way, Burbank, Calif., $2,900,000.

# **Public Works** . . . *and The National City Bank of New York*

*Growing populations demand schools—hospitals—roads*

If you live in an average community, you've built more than one new school during the past five years. You've either built or have helped another community to build or add on to a hospital. Your state, county or town fathers are probably wondering how much longer they can get by without expanding their water and sewerage systems. And you've almost surely remarked, as you've driven around, that something had better be done about the roads, or there won't be any left.

All this need for new construction is partly an outgrowth of our soaring birth rate, which hit a record high in 1947. Some of it is due to greater emphasis upon health and medical care. And a lot results from the lag in construction during the depression, the Second World War, and the Korean emergency.

This backlog of city, county and state public works projects has resulted in a rapidly rising rate of borrowing, which reached a level above $4 billion in 1952.

As in the past, The National City Bank of New York will help citizens across the country finance their schools, hospitals, utilities, highways, and other public works. The Bank not only invests its own funds in state and local public works securities, but plays a continuing active part in their underwriting and distribution. In 1952 alone, it participated in the sale of more than $750 million of such obligations. Thus the Bank shares in the civic progress of many communities, as well as in fostering the development of commerce and industry.

For information, write: The National City Bank of New York, 55 Wall Street, New York, N. Y.

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**First in World Wide Banking**

# IF YOU THINK ALL FIRST AID KITS ARE ALIKE -WE'VE GOT NEWS FOR YOU!

LET'S BE FRANK about it . . . First Aid Kits haven't shown the continuing improvement recorded by other items of safety equipment . . . so we did something about it!

We "put the finger" on every place where modern design, latest quality control, color keying, and improved manufacturing techniques could produce BETTER First Aid Kits.

Then we MADE these improvements. Many of the changes are small in themselves, but they add up to a BIG DIFFERENCE. Let us prove we have something BETTER—something you don't want to miss!

## NEW PRODUCT PROTECTION . . . added Quality Control Methods give you Pharmaceutical thoroughness

To assure purity, freshness, sterility, every Unit "D" box "signs-in" and is permanently stamped with a number. This Quality Control number means unit responsibility, covering every operation.

Sterilization gets the full treatment! All compresses and dressings are sterilized *in their Unit "D" boxes.* A recording thermometer and a tell-tale glass vial that rides with every batch confirm temperature, exposure and penetration of purifying steam. The chart and vial are numbered and filed. This number is stamped on every box in the batch . . . another step in our program of improved, responsible protection for *you.*

## THE NEW LOOK . . . a dressing-up that pays off in convenience, use!

Even the color is NEW. New blue gives the case and Unit "D" boxes a clean, distinctive appearance. Hard wearing surface of baked enamel on the case resists grease, dust. New, simplified illustrated instructions on many Unit "D" boxes aid user. Our labeling meets latest requirements of the U. S. Pharmacopeia and Food and Drug Administration.

## THE CASE with the built-in extras

No overlapping lid to complicate handling, storage. Unit "D" boxes extend free of the base, give "finger-room" for quick removal of any package. Tubular rubber gasket sits securely in strong metal channel in base, adds extra pressure, more contact surface when lid is closed. Truly an "M.S.A. All-Weather" feature. The wall-mounting brackets are positioned in center of kit for better balance, support.

## FIRST AID MATERIAL Features

M.S.A. Visual Swabs have *gauze tips* which are less absorbent to assure full utilization of antiseptic and no loose fibers to catch on tissues. Color keying of labeling assures positive, quick identification.

Ammonia Inhalants contain pure, uncolored solution. They are wrapped in special treated covering that turns brown in case of leakage. A two-week test period is maintained before final packaging.

You'll find "extras" in our Ammonia Ampoules, too. "Color-Break" line on the glass vial gives clean, quick break. Labeling is printed on both the protective sleeve, and the glass vial for identification and as a precaution against misuse should the sleeve be lost.

**AND THERE'S MORE, LOTS MORE.** Complete size and style selection from more than 70 different items . . . this BIG NEWS applies to all sizes . . . 10, 16, 24, and 36-Unit Kits! But seeing is believing . . . so call your M.S.A. man NOW.

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Cable Address: "MINSAF" Pittsburgh

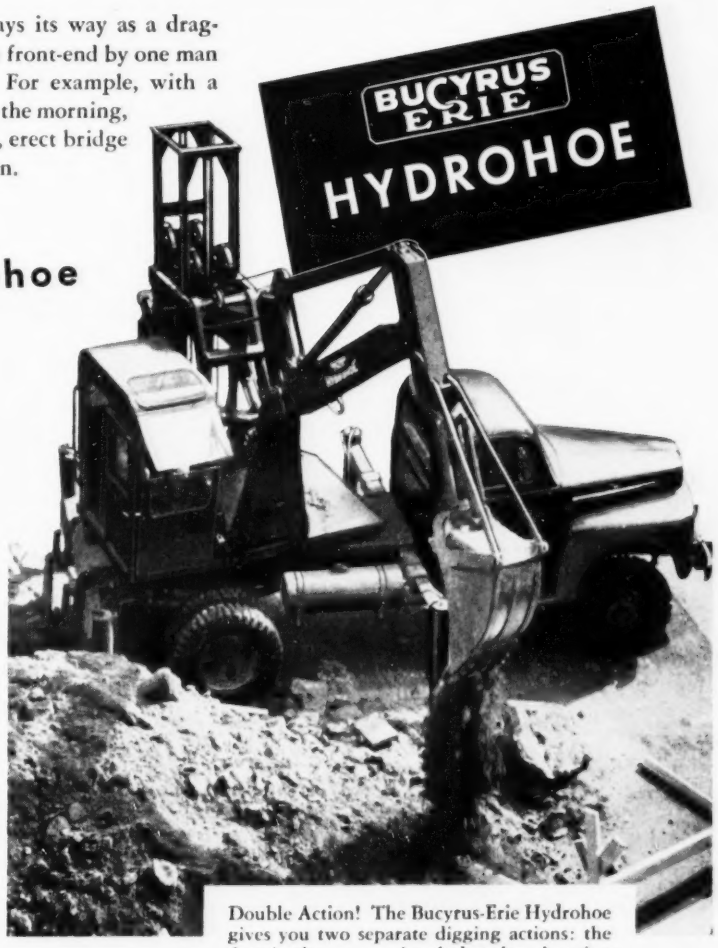
*Call the M.S.A. man on your every safety problem . . . his job is to help you*

# *Double-Action* DRAGSHOVEL WITH A QUICK-CONVERSION BONUS

THE Bucyrus-Erie Hydrohoe not only pays its way as a dragshovel, but it has been converted to crane front-end by one man in less than one hour (actual time test). For example, with a Hydrohoe you can dig trenches or footings in the morning, then convert to crane front-end and set pipe, erect bridge sections or handle road forms in the afternoon.

## Look at these Hydrohoe Advantages

- **Telescoping boom eliminates up to 40 percent of time lost moving up.**
- **Precision control — every work function fully hydraulic.**
- **No bails, sheave blocks or drag ropes to interfere with loading.**
- **By telescoping boom, operator can peel off scallops at grade level — dig a smooth, level trench.**
- **Hydraulic ejector, built into dipper, assures fast, clean dipper dump — makes it practical to use a narrow, 12-inch wide dipper.**
- **Travels up to 50 mph on open highway.**




Double Action! The Bucyrus-Erie Hydrohoe gives you two separate digging actions: the first is the conventional dragshovel action of the dipper moving through its digging arc; the second, a separate horizontal stroke, obtained by telescoping the boom. Unit is available with both 18- and 12-in. wide bucket.

A quick boom switch — and here's your Hydrocrane, ready for work with clamshell bucket, crane hook, magnet, grapple or forked grab. Boom telescopes a distance of 8 feet—great for reaching hard-to-get-at places.

BUCYRUS ERIE HYDROCRANE SOUTH MILWAUKEE, WISCONSIN

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**BUCYRUS-ERIE COMPANY**
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Gentlemen:

☐ Please send Hydrohoe and Hydrocrane literature.
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5H53

**AN ALLIS-CHALMERS REPORT**

# How hydraulic torque converter drive improves big tractor performance—increases job output

With a two-range transmission and hydraulic torque converter, the Allis-Chalmers HD-20 is the only crawler tractor that is capable of exerting maximum drawbar pull *at all times* . . . under all load and terrain conditions . . . without gear-shift guesswork.

Whatever the job, the operator need merely make contact with the load and then open the throttle. As the load requirements change, the hydraulic torque converter *automatically* matches the conditions with exactly the right combination of speed and pull.

This eliminates most shifting . . . leads to far more work done in a continuous work cycle . . . far longer equipment life.

*(Advertisement)*

**BULLDOZING** — Hydraulic torque converter lets Allis-Chalmers HD-20 take full advantage of available horsepower, roll bigger loads, tackle tougher dozing jobs. With full control at the throttle, operator can work safely and efficiently, regardless of terrain.

**PULLING** — Hydraulic torque converter drive actually multiplies torque up to four and one-half times... develops tremendous drawbar pull to start the load smoothly . . . and automatically accelerates to the highest speed that conditions permit, in either high or low range.

**PUSHING** — Operator just makes contact, then opens the throttle and relaxes. The HD-20 automatically matches speed to that of pushed equipment, maintains steady contact while loading, sends load off to the fill at higher speed.

**DIGGING AND LOADING** — With the HD-20G, the operator crowds surely and steadily, using only throttle and bucket levers. With full horsepower always available even at creeping speed, he can work effectively in mud, on hillsides or the edges of banks.

**OPERATOR COMFORT AND EFFICIENCY** — He chooses speed range when he starts, and he can finish most jobs without further clutching or shifting (except for reverse). Result — he works easily, yet efficiently all day long.

**LONGER LIFE FOR BIG EQUIPMENT** — Hydraulic cushioning reduces shock and vibration, with less strain, less wear on both the HD-20 and its auxiliary equipment, whether mounted or drawn. That means *less* downtime, *more* production time.

*Hydraulic torque converter drive, exclusive as standard equipment with Allis-Chalmers, is just one of many reasons why the HD-20 assures you higher output with less upkeep. Your nearby Allis-Chalmers dealer invites you to get the full story . . . and to see it in action.*

**ALLIS-CHALMERS**
TRACTOR DIVISION — MILWAUKEE 1, U. S. A.

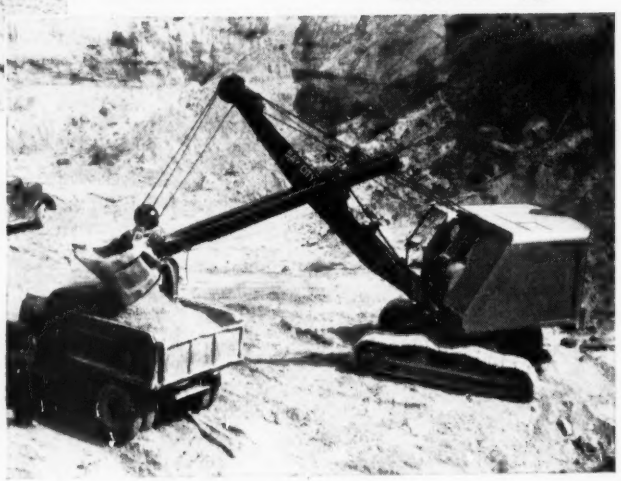
Weight — 41,000 lb.
175 net hp. at flywheel

*(Advertisement)*

# CAN YOU GET THIS REACH WITH YOUR SHOVEL?

**24′-1″ CUTTING RADIUS**
**45° BOOM—½ Yard**
**Model 30**

**28′-1″ CUTTING RADIUS**
**45° BOOM—¾ Yard**
**Model 45**



**Here we show** two shovels—a half-yard above and a ¾ yard at right but both offering wide working ranges which invite comparison with any other shovel of the same capacity. These are two distinctly different models. The ¾ yard shovel is not a built-up machine from the ½ yard design. For instance the Model 45 has a unit-cast base with a 71″ diameter roller path whereas the Model 30 has a 56″ diameter roller path.

**All the way** from ground to boom-point the ¾ yard shovel is bigger, heavier and more powerful. However both shovels have tandem drums, one-piece continuous chain crowd, electric dipper trip, power booster clutches and many other heavy-duty design and construction features that mean bigger operating value. Why not get the full story on these convertible shovels today by writing for catalogs.

BAY CITY SHOVELS INC., BAY CITY, MICHIGAN

216

***write for your catalog***

*Get either or both these catalogs, packed with pictures of parts, assemblies and jobs. Ask for Catalog 2530 on the ½ yard and 3745 on the ¾ yard machine—no obligation.*

# BAY CITY

**SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS**

# WHY IT PAYS TO BUY STEEL FROM WAREHOUSE

## You don't waste productive space storing steel!

**WHEN YOU BUY STEEL FROM WAREHOUSE, YOU GET:**

- LOWER INVENTORY COSTS
- LOWER SPACE COSTS
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- LOWER CAPITAL INVESTMENT
- FASTER PRODUCTION
- FEWER INVENTORY LOSSES

You can turn your present steel storage space into profitable production space—without danger to the continuity of your steel supply. Just use a U. S. Steel Supply warehouse as your own. U. S. Steel Supply can deliver the steel you want to your plant or job site at whatever time you desire. Ask your U. S. Steel Supply salesman to arrange delivery of your steel at *your* convenience—and you'll find your steel arriving with timetable dependability.

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# Modern Aggregates Plant in Operation at Aden

## Plant installed by Bechtel helps build new 100,000 barrel-per-day oil refinery for Anglo-Iranian Oil Company

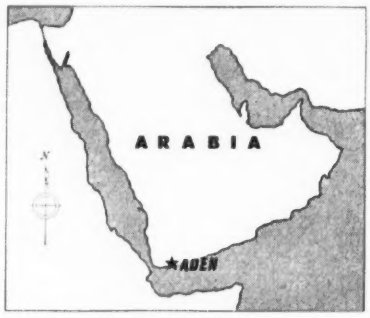
Anglo-Iranian Oil Company's new 100,000 barrel-per-day refinery, located at Aden near the southernmost tip of the Arabian peninsula, will be constructed with aggregates produced by one of the world's most modern all-purpose quarry plants.

The plant was engineered and manufactured by PIONEER Engineering Works at the request of Bechtel Corporation of San Francisco. It is supplying crushed stone for docks, jetties, piers, and concrete aggregates to be used in construction of the giant refinery and its attendant facilites.

### One-half million yards of aggregates

Size of the project is shown by the fact that eventual plans call for use of nearly one-half million yards of aggregates. It is expected that between 12,000 and 15,000 construction workers recruited from most of the free nations of Europe and Asia will be employed on the job.

Bechtel, one of the world's foremost international builders, have used PIONEER equipment for a number of years, so it was natural that they called upon Coast Equipment Company, PIONEER's San Francisco distributor, for help in obtaining a high quality




plant of sufficient capacity, simple operation, and low maintenance.

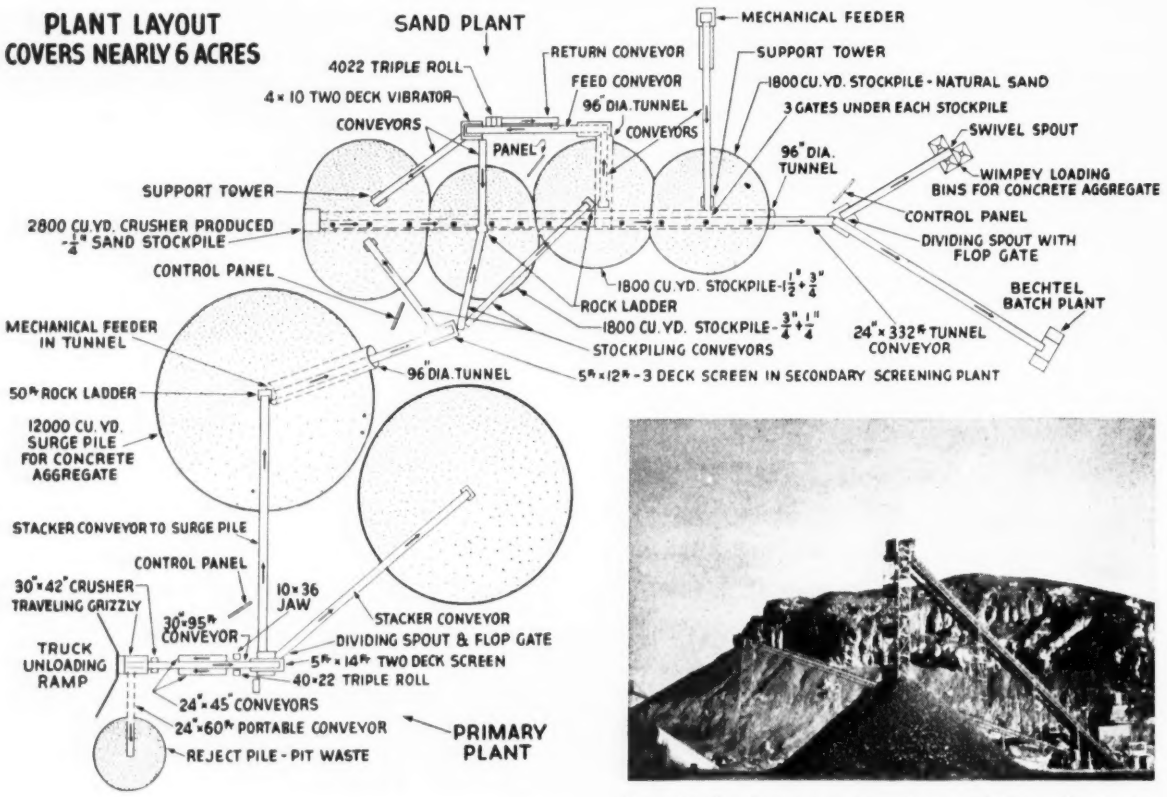
There was, of course, considerable preliminary work to be accomplished. First, a PIONEER engineering-geologist was sent to London to develop tentative plans for the big plant which was to supply materials for both Bechtel and the British joint contractor, George Wimpey & Co., Ltd. Then, at Bechtel's request, PIONEER's engineer went to Aden to survey possible quarry and plant sites.

A detailed examination of available aggregate sources disclosed that careful testing and analysis would be needed. With the material source and concrete-aggregate mix thus scientifically selected, PIONEER could assure Bechtel and Anglo-Iranian that all possible precautions had been taken to provide a Portland cement concrete of the highest durability and permanence.

The result is a complete, high production plant which has been called the world's most modern.

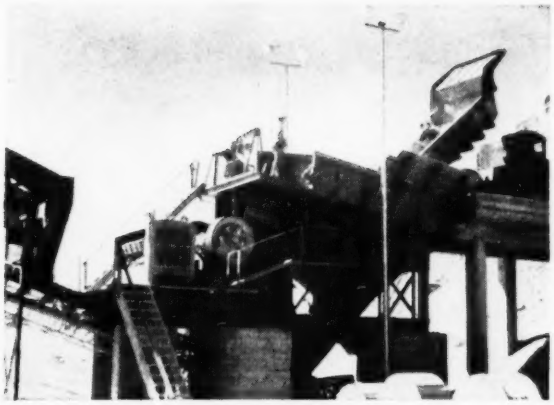
### Occupies six acres

Although it occupies six acres, it can be operated by a crew of as few as five men. This is made possible by use of push-button stations on four strategically placed control panels. From these, conveyors and screens can be operated, material gates opened and closed, and the entire flow governed by remote control. Surge piles of materials requiring further processing to meet rigid specifications and finished product piles for concrete aggregates are provided.

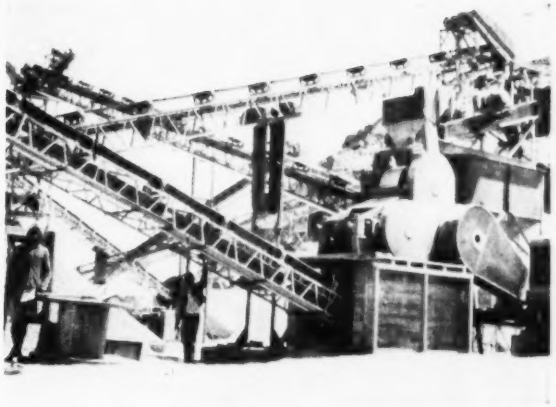




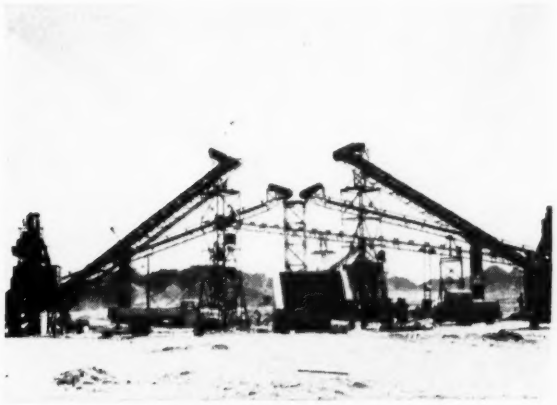

Surge pile of crusher-run materials to be screened into specification sizes for Bechtel or Wimpey as needed. In background is PIONEER stacker conveyor for surge pile of material for further processing.



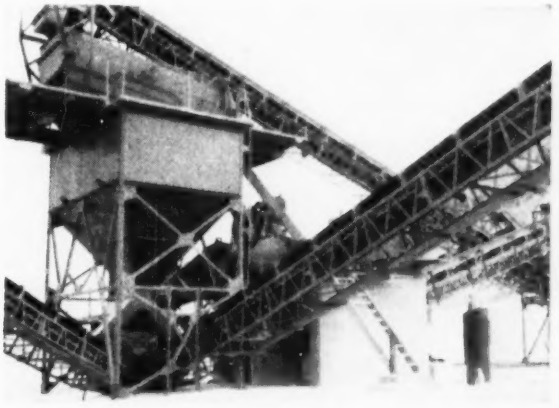
**PIONEER 163 Primary Unit, consisting of 48" x 14' Traveling Grizzly Feeder and 3042 Jaw Crusher, receives tough trap rock from quarry, reduces it to minus 8". Material then goes via 30" x 95' conveyor to secondary crushing cycle.**



**In secondary crushing plant, material is separated on a 2-deck 5' x 14' PIONEER Mesabi Vibrating Screen. Plus 6" goes to 1036 Jaw Crusher. Material from 6" down to top specification size goes to 4022 Triple Roll. Both products are returned in closed circuit.**



**Stockpiling and Sand Plant delivery conveyors. Note tunnel abutment in foreground. In the distance, delivery conveyor from product tunnel to batch plant is visible.**



**Sand Plant, where surplus — 1½" + ¾" is used to manufacture specification sand. This enables the contractor to utilize the entire quarry feed as pay material.**

The first of several shipments left PIONEER's Minneapolis factory in December, 1952. Eighteen flat cars were needed to transport the entire plant.

All equipment arrived at Aden intact and undamaged. There, a PIONEER erection engineer was waiting to supervise its installation. Sixty days later it crushed the first rock.

The "plant" actually consists of four major units . . . a primary and secondary crushing plant, a secondary screening plant, product stackers with reclaiming system, and a sand plant.

Hard, tough trap rock is blasted from a cliff 1000 feet away. After reduction to -1½" by the three primary and secondary crushers, it is surge-piled over a mechanical feeder and conveyor located underground in a reclaiming tunnel.

Material is then conveyed to a sizing screen which separates it into three sizes (-1½" + ¾", -¾" + ¼", and -¼") each of which is stockpiled over a long reclaiming tunnel. Under each of these product piles are three electrically-controlled, air-activated gates which allow the operator to feed selected sizes onto the tunnel conveyor.

This conveyor is equipped with twin spouts and a solenoid-controlled flop-gate so it can supply either the batch plant or any one of three 21-yard bins. When desired, excess material from the -1½" stockpile over the tunnel can be sent directly to the sand plant.

Since the plant began production, operation has been almost continuous, and original performance expectations are being exceeded.

This is another example of outstanding performance by PIONEER quality-built equipment . . . experienced by a contractor who again is finding that PIONEER extra capacity, rugged dependability and simplicity of operation are helping him make a considerable saving in production costs.

With competition as rough as it is, it takes close bidding to get a job these days. Now, more than ever, it's important to have that PIONEER EDGE on *your* side. It isn't the original cost of equipment that counts most . . . it's the lower cost at which you can produce sand and crushed stone that tips the balance in your favor.

For details on how this equipment will help you save money on your next job, write PIONEER Engineering Works, Inc., Minneapolis, Minnesota. (A subsidiary of Poor and Company, Chicago.)

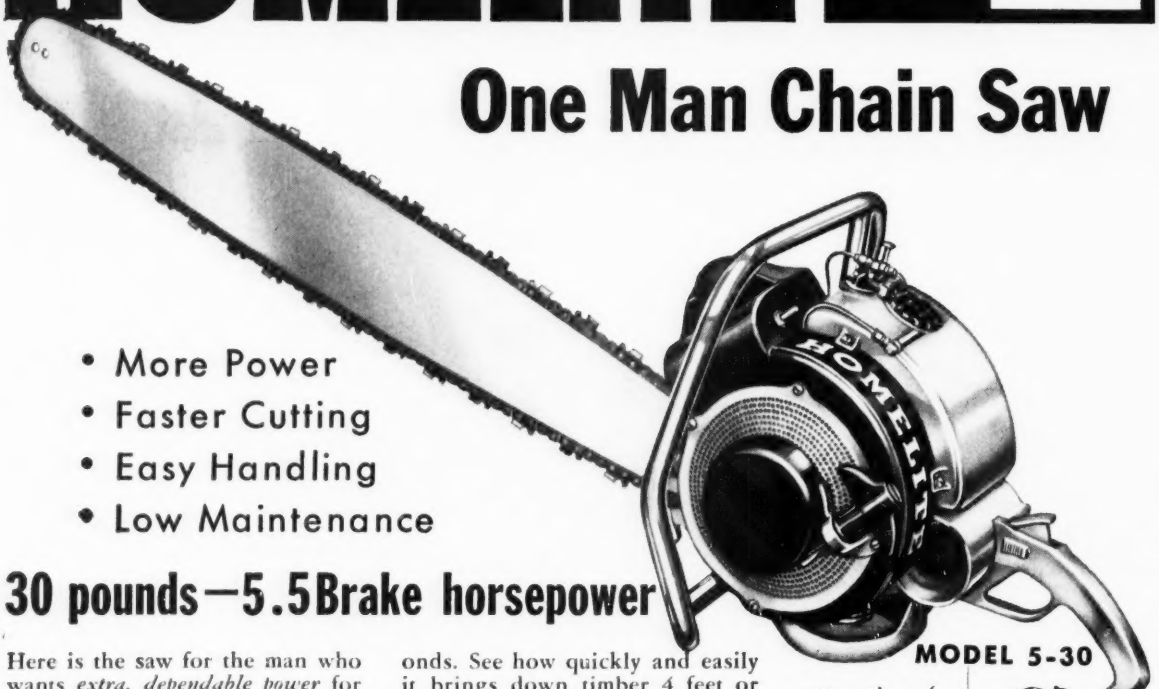
BUY BOTH!

**Pioneer** *Continuflo* **EQUIPMENT**

# The KING of them all...

## It's the NEW model 5-30 HOMELITE 5.5 Brake hp

## One Man Chain Saw




- More Power
- Faster Cutting
- Easy Handling
- Low Maintenance

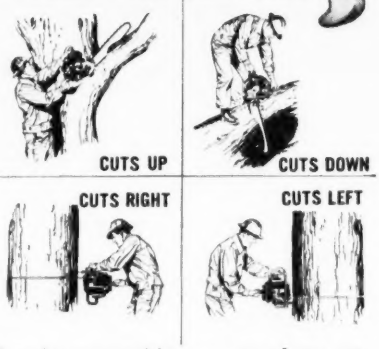
## 30 pounds—5.5 Brake horsepower

Here is the saw for the man who wants *extra, dependable power* for clearing wooded areas or cutting piling and heavy timber. It's the saw that gives you more power per pound than any other one man chain saw on the market.

Pick it up and handle it. You'll be amazed at its light and balanced weight. Pull the starter and see how easily and quickly it starts. But most important, let it get its teeth in a tree and see how lightning fast it cuts. Watch this powerful Homelite purr through a 20-inch trunk in as little as 20 seconds. See how quickly and easily it brings down timber 4 feet or more in diameter.

Designed and built by Homelite . . . manufacturers of outstanding gasoline-engine-driven units for more than 30 years . . . this new Homelite Model 5-30 has everything you want in a chain saw: Automatic clutch, all angle carburetion, positive chain lubrication, quick starting, weatherproof performance, rugged and simple design and money-saving dependability for which Homelite has been famous for generations.

**MODEL 5-30**




Cuts in any position . . . up, down, or upside down . . . on all types of cut . . . felling, bucking, boring, notching, trimming or undercutting.

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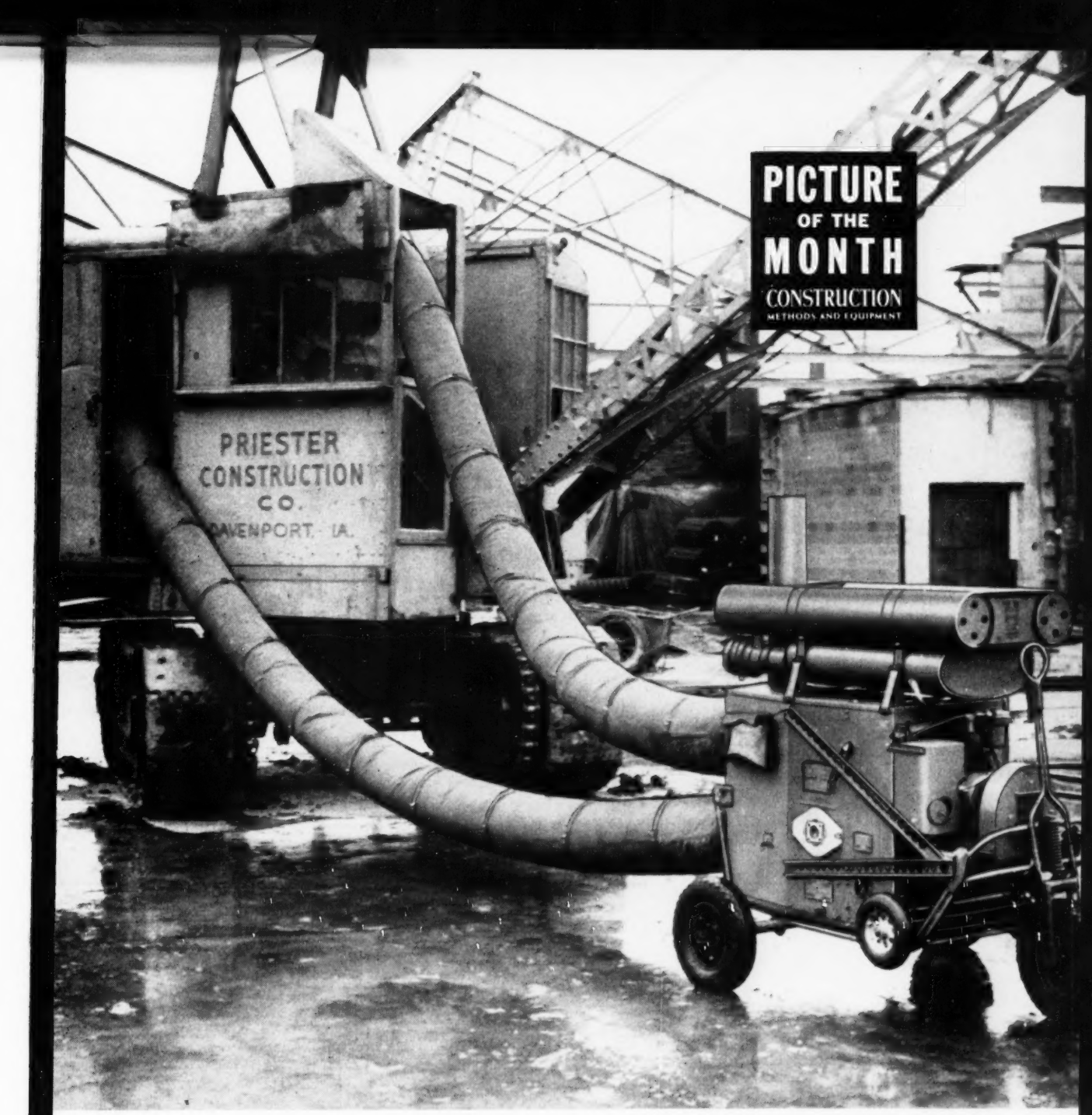
*Canadian Distributors:* Terry Machinery Co., Ltd., Toronto, Montreal, Vancouver, Quebec.



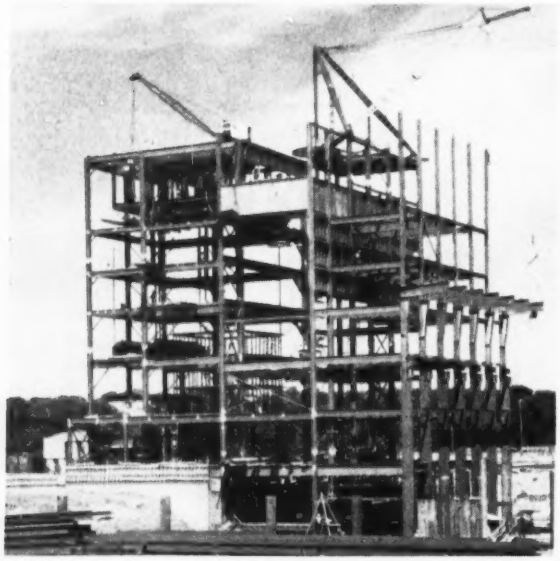

# Beating Jack Frost

Preheat before starting a cold engine in the dead of winter eliminates costly delays on those frigid mornings on the job. Priester Construction Co., Davenport, Iowa, takes no chances with this crawler crane used on a building erection contract. The Herman Nelson portable heater was wheeled out over the icy ground to the crane. Two flexible ducts direct heated air across the power plant inside the cab. Gas engine-operated, this forced air blower-type space heater can be used anywhere on or off the job. After the crane engine is running, the heater can be set up to blow heated air into a construction area to keep men and materials warm. Or it may be called upon to heat a maintenance shop or temporary tent. Its products of combustion are exhausted into the atmosphere. Handy portables like this one often pay a double dividend. In addition to making engine starting easier and quicker, they take the chill out of stiffened lubricants, protect moving parts against cold-weather friction the moment the engine begins to turn over. Damaged engine parts and their replacement sometimes cost more than one of these temporary heat plants.

# Construction News in Pictures . . .

**CLOSE-COUPLED COMPACTOR —** Earthfill is compacted to high density during construction of the Vermillion Valley Dam in the High Sierras of California by the Southern California Edison Co. Southwest four-wheel, articulated rubber-tired compactor is towed by a Caterpillar DW21 tractor. Those Goodyear tire diamonds leave an interesting pattern.

*Continued on page 47*



**CRANE ON TOP —** That's a Lorain TL crawler crane setting steel on top of the new North Omaha (Neb.) power plant. Hart Construction Co., Omaha, operates the crane on wooden mats spanning the structural steel 140 ft above ground. The Lorain's special job is to hoist parts for a boiler 110 ft high. It was lifted to the top in two sections by the stiff-leg on the right.

**BRUSH RAKE —** Five 90-lb rails, reinforced and swung from the top of a Bucyrus-Erie dozer on an International TD-14A crawler, speed right-of-way clearing on a power line in Oklahoma. The heavy rails extend 18 in. below the dozer edge. Hinge-mounted on a bar across the top, they are removed in a matter of minutes. Operator Allen Jones (right) and builder J. V. Wilson look it over.

Now... set fastening studs wherever they're needed
MODEL 450 REMINGTON STUD DRIVER
Here's new economy . . . new speed in construction fastening! The Remington Stud Driver joins wood or steel sections to concrete or steel surfaces in seconds . . . easily sets as high as 5 studs a minute. Powerful 32 caliber charges drive studs arrow-straight. The tool's light weight—only 5½ pounds—simplifies handling wherever studs are needed.
New guards for specific uses now make the self-powered Remington Stud Driver more versatile than ever. These attachments take all the guesswork out of stud location . . . assure fast, accurate fastening for every job. Illustrated are just 4 of these special guards. For full information about the complete line and about the Remington Stud Driver, send the coupon below.
A complete line of guards for special applications
Guard for Structural Channel
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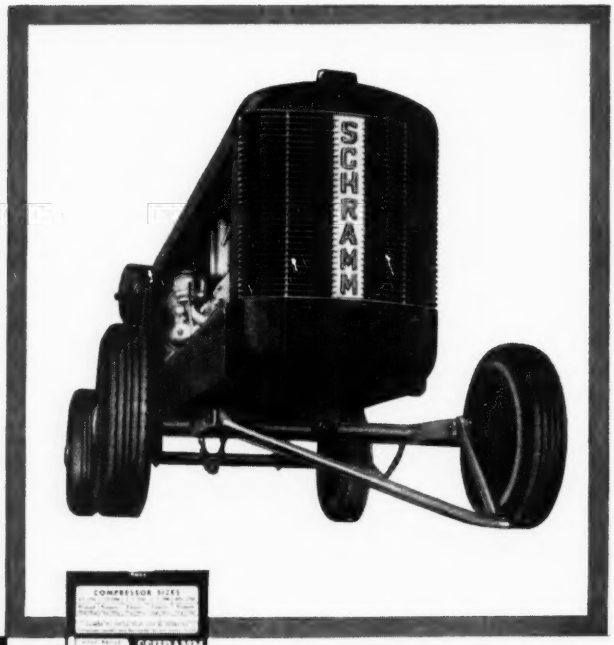
# GUARANTEED PERFORMANCE with SCHRAMM AIR COMPRESSORS AND TOOLS

Rock Drills D-55, D-45, D-45/60
Rock Drill D-20
Paving Breakers B-80, B-60, B-35
Sheeting Driver BSD-80, BSD-60
Trench Digger TD-25
Backfill Tamper BT-32
Wagon Drills WDR-126, WDR-45, WDR-55
Clay Digger CD-25
DeLuxe Pneumafeed Self-Propelled Wagon Drill

Schramm offers you a complete line of Compressors and Pneumatic Tools that embody all of the latest improvements in design and construction. Tools illustrated show only the general range included in the Schramm Golden Anniversary Line.

There are various sizes and types available to meet every requirement, including compressors ranging in sizes from 20-35-60-105-210-315-600 c.f.m. with Paving Breakers, Wagon Drills, Pneumafeed, Pneumajack, Pneumadriver, Rock Drills, Sheeting Drivers, Clay Spades, Backfill Tampers and a complete line of accessories including air hose and fittings, drill rods and detachable bits.

Write for Catalog 5350.

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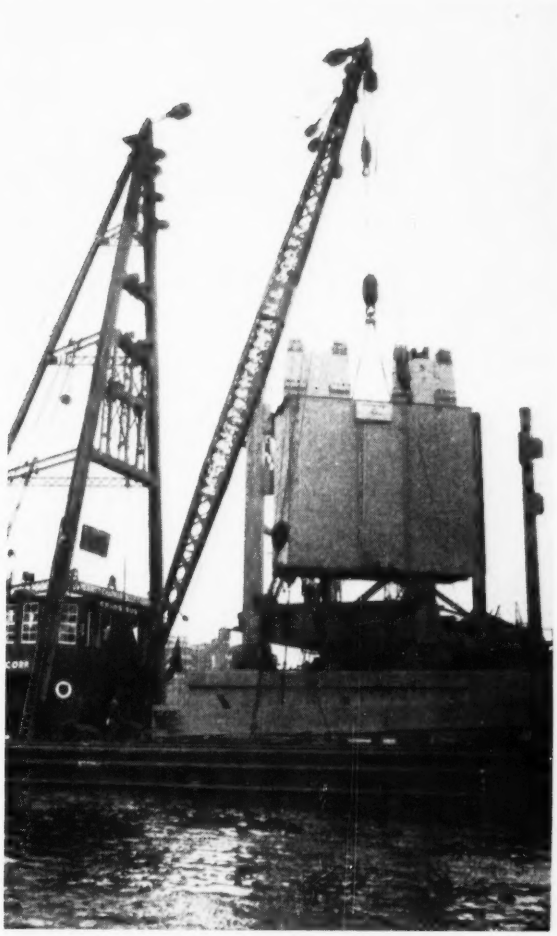
**TOOL SELECTOR**

Here is a helpful way of determining tool capacities that removes all doubt and confusion in selecting the proper combinations for your job, no matter how large or small.

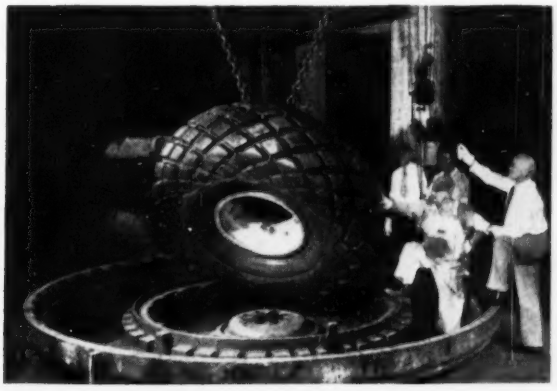
Sent FREE upon request.

Write on your business letterhead or enclose business card and address reply to SCHRAMM, INC., Dept. SMH, West Chester, Pa.

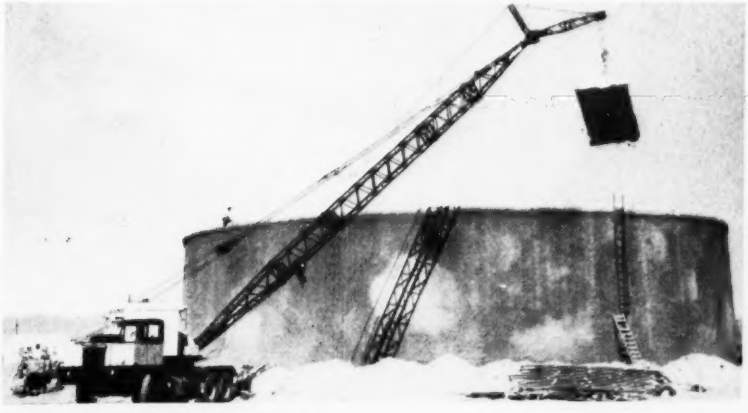


**BIG BOX PLACING —** Steel counterweight casing, weighing 77 tons, is lifted to New York Central Railroad Bridge under construction across the Harlem River in New York City. Box is one of four placed for American Bridge by Merritt-Chapman & Scott's floating derrick Colossus. They will be filled with concrete.

**SHORT HAUL SPECIALIST —** James William Hartshorne, Moorestown, N. J., specializes in housemoving with "Tournamover" he had built by R. G. LeTourneau. The U-shaped carrying section adjusts to the width desired and picks up a building bodily. This house was removed from a parkway widening project on Long Island.—Wide World photo



**TIRE FOR CELEBRATION —** Goodyear Tire & Rubber Co. started its 55th anniversary celebration by producing its 600,000,000th pneumatic casing. An earthmover type (size 27.00 - 33), it weighs 1,500 lb, stands nearly 7½ ft high and retails for approximately $3,500. It can carry 15 tons when inflated to 35 lb.



**LIFTING OUT THE ROOF —** In Aurora, Colo., the concrete roof of the city reservoir collapsed and fell in. Horn Crane Service of Denver put this 30-ton Lorain Moto-Crane on the job to remove the debris. Large pieces of concrete were lifted out with an 85-ft boom and 15-ft jib. Then an International TD6 crawler with bulldozer was lifted over the wall to pile up material which the crane loaded out with a clamshell.

**SUBWAY BULLDOZER—**Down Philadelphia way Buckley & Co. is excavating for an extension of the city subway. This Caterpillar D6 dozes in the tunnel to feed a clamshell.

## New rectifier welder means greater welding performance . . .

# RA welder pioneered by Westinghouse now provides many added advantages

Here is the *all-new* RA Welder, truly the finest, fastest and easiest, *any* position, d-c welding machine on the market. Westinghouse, the pioneer in rectifier type d-c welding equipment, has incorporated in the new welder all the engineering know-how and years of "on-the-job" welding performance needed to make the "RA" a *proved performer*. The exclusive features alone —Arc-Drive Control, Built-in Automatic Overload Protection, Single-Range Stepless Current Control— set new quality and performance standards for the welding industry.

Take the Arc-Drive Control for example: This exclusive Westinghouse feature provides an extra "push" to the metal as it leaves the electrode and moves toward the welding surface. This extra "push" assures greater weld penetration. In addition, the Arc-Drive Control enables the operator to quickly and easily adjust the arc-drive current to fit the needs of the particular job.

Another feature is the new "on-off" switch—the AB De-ion® Circuit Breaker. This circuit breaker provides positive and automatic protection against excessive overheating, yet permits harmless temporary overloads without interrupting production.

A rugged frame and a *Bonderized* sheet-steel case enclosure provide maximum protection for both indoor and outdoor operation.

Superior ventilation combines the use of natural air flow and a fan powered by a dependable, nonreversible, totally-enclosed, 1/8-hp motor with prelubricated ball bearings. Specially designed air ducts within the unit provide for free and dependable passage of cooling air—this means longer life.

Features like these—the result of years of experience in producing rectifier welders—put the Westinghouse RA Welder ahead of other types of d-c welding equipment. Get all the reasons why the Westinghouse RA Welder is the best buy. Ask your Westinghouse representative for full details, or write Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa.

### COUNT ON THESE DEFINITE ADVANTAGES

- **ARC-DRIVE CONTROL** provides for greater weld penetration.
- **SINGLE-RANGE STEPLESS CURRENT CONTROL** allows infinite number of current settings with single-dial adjustment.
- **CIRCUIT BREAKER "ON-OFF" SWITCH** provides positive and automatic thermal overload protection.
- **SUPERIOR VENTILATION** affords greater natural cooling . . . longer winding life.
- **WEATHERIZED CONSTRUCTION** offers maximum indoor and outdoor weather protection against snow, rain, water and the most rugged of operating conditions.
- **QUIET OPERATION** means less operator fatigue and provides longer machine life through elimination of moving parts.

J-21835

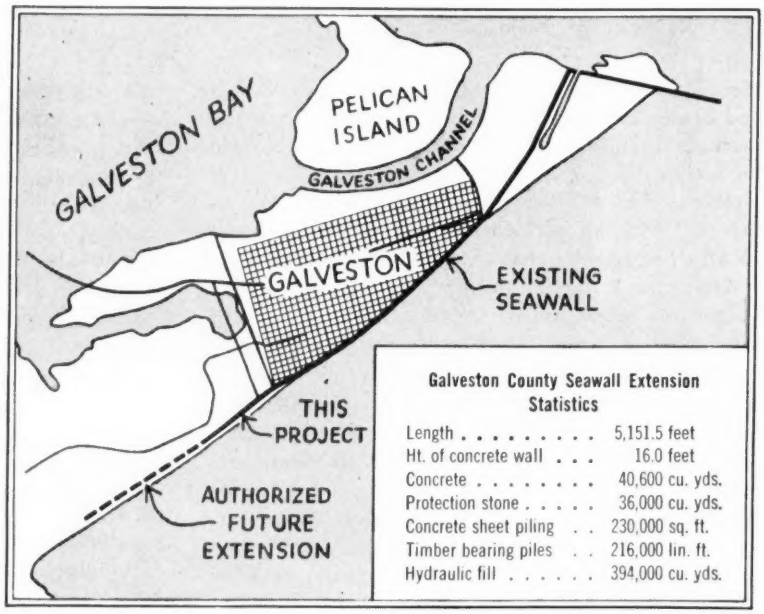
YOU CAN BE SURE...IF IT'S Westinghouse

CATERPILLAR

# DW10s lick down time problem on Galveston Seawall Extension for Trotti & Thompson, Inc.

To protect homes and buildings that had spread beyond the Galveston Seawall, Congress in 1950 authorized a three-mile extension. Initial construction by the Corps of Engineers, with $2,875,000 contributed by Galveston County, took in a one-mile strip.

For earthmoving on this job, Trotti & Thompson, Inc., Beaumont, Texas, assigned three Caterpillar* DW10s, two DW20s and competitive scrapers. According to Jess Garrison, Superintendent, the competitive units broke down 50% of the time, so three more DW10s were added to the line-up. Result: trouble-free operation and money-making production. A typical example: handling 12 yards per load, the DW10s averaged a trip every 13 minutes on a 6,000-foot haul. In all, there were 20 to 25 Caterpillar units working here.




**Galveston County Seawall Extension Statistics**

| | |
|---|---|
| Length | 5,151.5 feet |
| Ht. of concrete wall | 16.0 feet |
| Concrete | 40,600 cu. yds. |
| Protection stone | 36,000 cu. yds. |
| Concrete sheet piling | 230,000 sq. ft. |
| Timber bearing piles | 216,000 lin. ft. |
| Hydraulic fill | 394,000 cu. yds. |

One of six Caterpillar DW10 Tractors with No. 10 Scrapers moving dirt on the double on the Galveston County Seawall Extension for Trotti & Thompson, Inc., Beaumont, Texas.

Rolling a heaping load on its scientifically designed No. 8S Bulldozer, this Cat D8 Tractor puts out profitable production day after day.

With Cat* DW10s on your job, you can figure on profitable performance. Here's why: Ruggedly built, they stay on the job day after day with little attention and down time. Cable-controlled, they load and dump fast. They have speed on the road, with plenty of power to keep stepping up stiff grades. Three-point suspension enables them to keep four wheels on the ground in bumpy terrain. Big tires float them over soft material. And they turn quickly and easily. All these and other advantages add up to fast cycle times.

Good service is another important factor on any earthmoving contract. No matter where you send your equipment, you can count on prompt action from your nearby Caterpillar Dealer. Ask him to show you how it pays off to use big yellow earthmovers. Call him today for a demonstration!

**CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS**

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Volume 35
Number 11

CONSTRUCTION
METHODS AND EQUIPMENT

NOVEMBER
1953

Harold W. Richardson, Editor

# Job-Placement Physical Examinations . . . Are They Desirable?

JUST ABOUT THE HOTTEST subject in construction safety at the moment, according to interest evidenced at the Construction Section meetings, National Safety Congress, in Chicago last month is job-placement physical examinations. These differ from pre-employment physical examinations in purpose and intention. They are intended to determine whether an employee is physically fit to perform certain duties under certain conditions, not to bar a man from employment.

At Chicago the subject was developed at a round-table panel discussion with plenty of help from an interested audience. The panel was made up of representatives of labor, insurance, industrial medicine, contracting, job supervision and industrial commissions. Out of the session came some pertinent comments, well worth considering by any contractor interested in this relatively new approach to construction safety.

Job-placement examinations are found to be particularly effective for the more hazardous construction operations, such as steel erection, high-scaffold work, compressed-air tunneling and caissons, and to hoisting and equipment operation where the hazard extends to others besides the operator. But success of the program admittedly depends upon a full understanding of purpose and complete cooperation of all concerned.

Examination planning and procedure must be tailored to the job and objectives in mind, must be administered intelligently. Examinations of persons being considered for work in high places should concentrate on physical deficiencies that might cause dizziness or blackouts. Eyesight and hearing are important in other cases. Hernias are sought out where heavy lifting is involved.

Since a realistic attitude must be maintained, some sort of physical standards for each major job classification should be established. Who should set up these standards, and how they should be determined becomes one of the biggest questions of the examinations procedure.

At the Chicago meeting it was agreed generally that physical and medical standards should be established jointly by representatives of industrial medicine, contractors and labor. Contractors in an area should be in sufficient agreement to accept medical report cards of transferring personnel. Otherwise, demands for new examinations for every change of job will result in bitter employee opposition.

Job-placement physical examinations should be made on company time at company expense. They now cost from $3 to $5 each. On big projects they can be made on the job, but usually the employee will be sent to the doctor's office.

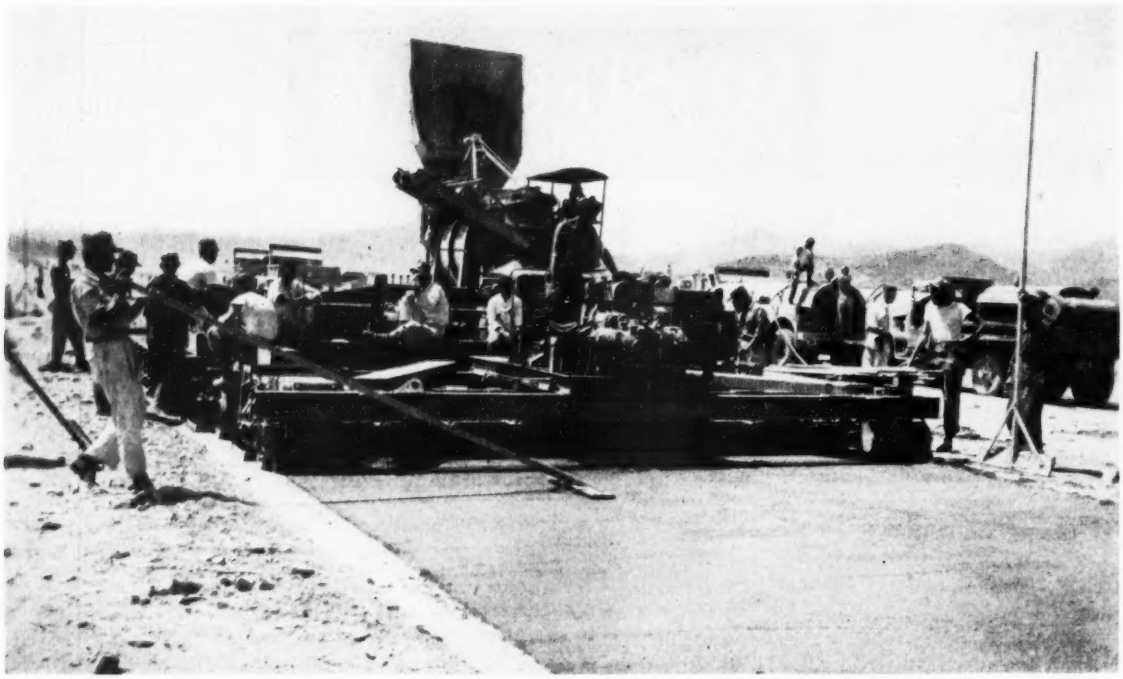
Labor leaders are prone to oppose an examination program in fear that their members will be barred from employment. Such fears are groundless where the program is realistic. If a man is not physically fit to perform certain operations, certainly no intelligent labor leader would insist on that man being employed at a risk to himself and fellow workers.

But labor will fight examinations so long as some contractors refuse to place a man with revealed physical deficiency in a spot he can work in safety. That is the basis of labor's opposition, which certainly can be alleviated by commonsense and a humane attitude on the part of contractors.

Knowing a man's weaknesses is half the safety battle. The other half is providing that man with safe working conditions, tools, equipment and proper supervision. That is why we believe job-placement physical examinations are desirable in cases of hazardous construction operations, and many contractors who are participating in such a program agree with us.

But before physical examinations on construction will become sound, accepted practice, there is much to be done in education and promotion. Labor must be sold and educated, but no more so than contractors and their insurance carriers, who all too often insist that an employee with any physical deficiency, no matter how slight, be barred from the job.

There's a big job to be done in this phase of construction safety, but the results will be worth the trouble and effort over and over again.



**Tight formation of paver, spreader and finisher beats dehydration as . . .**

# Aviation Engineers Lay Big Runway in Korea

**BATTLE OF THE ROCK** kept every available piece of crushing, screening and conveying equipment busy day and night to supply the larger aggregates. In spite of constant stockpiling, material sometimes dwindled 500 yd per day when paving went well.

DRY RIVER BED is a handy source of sand which was stockpiled before paving started. Barber-Greene bucket loader heaps it on a truck from a windrow of sand gathered by a bulldozer.

SAND IS NEEDED everywhere, so Tournadozer and scrapers are brought in to boost production. Sand was used for concrete, as subsurface cushion for runway and as cover for new concrete.

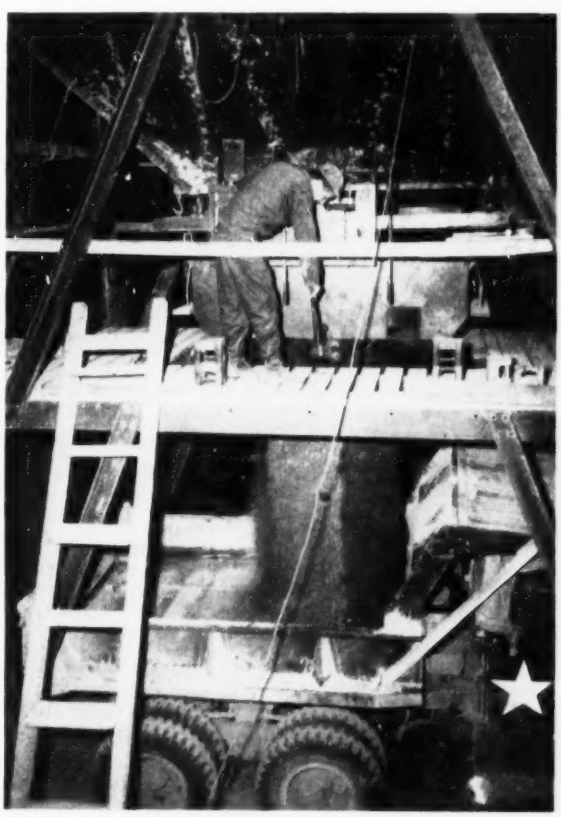
RUNWAY PAVING is a big job anywhere. In the far-away land of Korea it becomes a masterful achievement when done under wartime limitations. But the Aviation Engineers did it, and under some highly unusual conditions.

First, the climate was against them. Ceaseless hot and dry winds not only added to discomfort of the men, but also blew away as much as one sack of cement out of some dry batches. Sometimes freshly laid concrete dehydrated so rapidly that cracks appeared, and the section had to be ripped out and relaid.

Rock crushing for the larger aggregates was the chief bottleneck. The day-and-night drain on the crushed stone supply kept several portable plants busy every minute to avoid delaying the paver on the runway. Cement handling, done chiefly by native Koreans, was the worst job of all, and many laborers quit after two or three work shifts on that distasteful business.

At first, concrete spreaders and finishers were not available, and the heavy work had to be done by hand. Paving had gone on for 21 days before a spreader machine arrived on the job. Later, a finisher was brought in, and the new runway began to grow with gratifying speed.

To top it all off, paving was started with a green crew that had to learn by doing. But learn it they did, and the men became adept at improvising and repairing on the spot to keep those strips growing for the



AGGREGATES BATCH PLANT weighs and loads sand and rock around the clock. Operator here dumps batch into truck under strong lights. Batching and loading times were scheduled in seconds.

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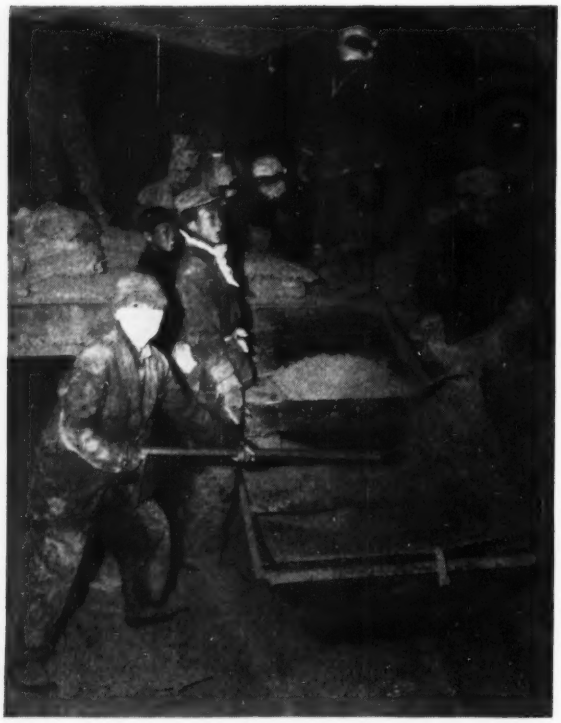
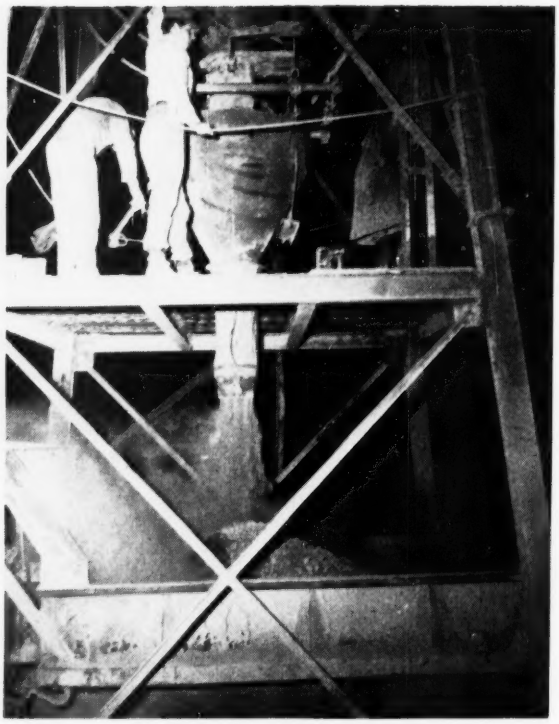
*Construction Methods and Equipment* is grateful to Lt. Col. R. W. de Lancey, CE (USAF), of the Aviation Engineer Force for bringing home this interesting pictorial account of the newest branch of our military construction forces meeting the acid test of pushing through a large project under a "crash" program and against great odds.



MEANEST JOB was cement handling, done chiefly by South Koreans. Night shot of dumping opened bags into batch plant hopper shows improvised face masks. Most of these crews quit after a few hours.



BATCH OF CEMENT pours over sand and aggregates on truck. Less than a minute has passed since truck started loading aggregates. Winds blew away quantities of cement, dust made men miserable.

BATCHING BY HAND becomes order of the day when cement batch plant breaks down. Paving dare not be delayed, and emergency crew dumps cement from bags on aggregates in truck.

BUCKET DUMPS a windrow and concrete is spread immediately by machine. Before spreader arrived, paver operator dumped bucket over larger area to save much hard labor.

jet fighters and other service planes impatient to use them.

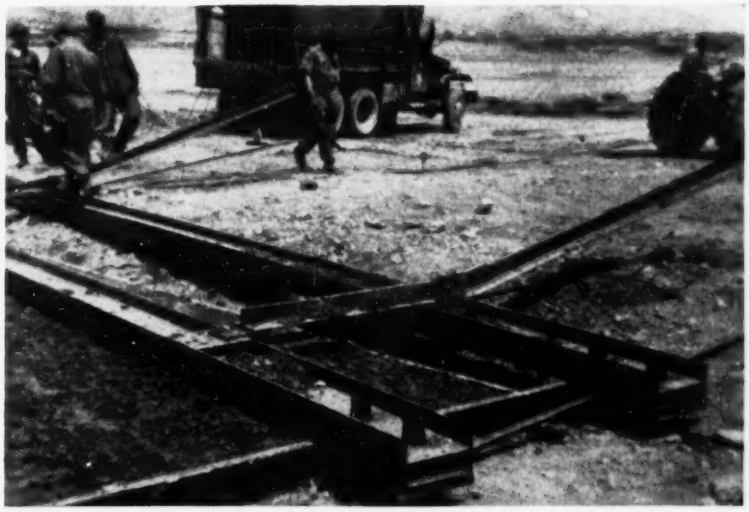
The new runway is almost 2 mi long. Other specifications have not been released. The job from start to finish was done by personnel in the USAF's Aviation Engineer Force, with headquarters at Wolters Air Force Base, Tex. The Aviation Engineers have been training their men in basic construction skills over the last few years both here and abroad, recently have taken on more construction work for the Air Force.

Maintenance of precious equipment working on the Korean runway received no holiday. Replacement equipment was hard to get and, in most cases, parts were not available. The finishing machine stopped working in one instance when the engine quit because of a broken ignition distributor rotor. None was available so the maintenance men made one to get the finisher going again. Therefore lubrication and periodic maintenance were followed to the letter—stepped up, in fact, because of the everlasting hot winds in the area.

Every available means of transport was pressed into service to distribute water from a runway terminal point kept supplied by a pipeline from a near-by river. The hot wind evaporated all moisture so rapidly that only by extra quick spreading and finishing was it possible to get quality concrete. The surface then was sprayed and covered shortly after by a sand blanket shoveled on by native labor.

Repeated sprinkling was neces-

IT'S A RACE, as concrete pour starts to grade, place sand cushion and forms ahead of paver. Note strip on forms to key slab-to-slab.



HOME-MADE FINISHER was tried out when job started and no finishing machine could be obtained. Two steel beams were dragged across form, front one (hinged) was moved back and forth laterally by manpower at ends of long angle-arms. It didn't work well, was redesigned. Finishing under hot winds became unending struggle.

GADGET—resembling giant potato masher —is rocked back and forth to help in finishing. There was much foot stomping.

JACK HAMMER FINISHER works well. It is mounted on a single built-up H-beam modified from unsuccessful device above. Truck winch pulls beam, gives a fair spreading and screeding action. Vibrating by air hammer makes better pavement, reduces much handwork.

sary at times and it even became necessary to cover newly finished strips with tarpaulins. The men also used much more water than usual under showers set up to wash off the ever-present dust and cement powder and to avoid troublesome skin irritations.

REAL PRODUCTION BEGINS when finishing machine arrives. Men had to learn how to use it first but soon attained a good speed.

*(More photos on next page)*

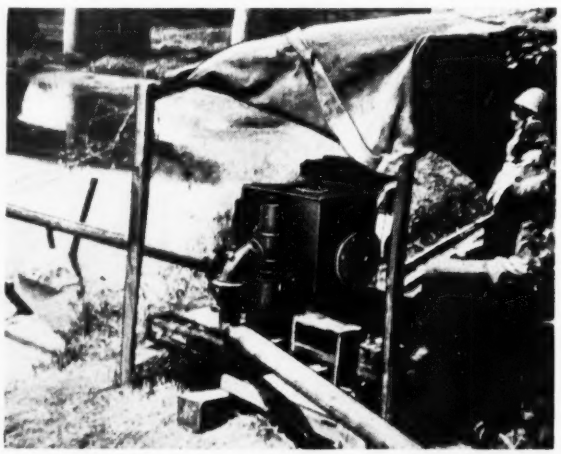
FINISHING OFF an expansion joint from a welded steel bridge. Note wheel-type joint cutter lying on bridge. Ammunition cans on far side contain water for final finishing of joint.

PINCHED TIN CANS worked best in the pouring of hot asphalt into joints. The tough asphalt required under jet planes had to be kept hot and poured quickly.

PULLING FORMS AT NIGHT was routine but regular production procedure. Around-the-clock paving made it necessary to pull some forms in less than 24 hr to keep form-setting ahead of pouring.

NO LONGER NEEDED, sand on cured runway is windrowed by a grader and loaded out. Power sweeper removed remaining fines, and completed strips were used by planes before job was finished.

CRACKS APPEARED QUICKLY on some finished surfaces where the constant hot winds dried out the concrete before it could be placed, finished and protected properly. This section was replaced.



WATER FROM RIVER is pumped to a terminal point near the runway. Pump operator gets instructions by radio to insure an adequate supply for the great demands under hot and dry conditions.

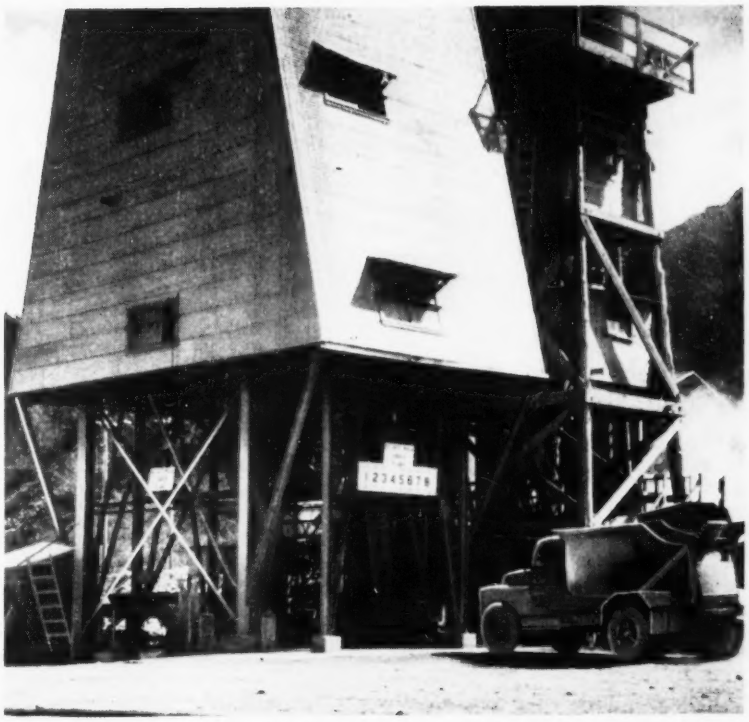
# Concrete on Call at Palisades Dam

DISPATCHING OF CONCRETE BATCHES is facilitated at Palisades Dam on the Snake River in Southwestern Idaho, by a light system that indicates which of several concrete trucks should load next. The call arrangement is necessary because there are many relatively small pours that take from 2 to 20 truck loads of concrete. The plant will switch from one mix to another to keep pours going throughout a work day. And one or two of the trucks will be assigned to each of the different pours. Thus, the driver for truck 5 may be working on a powerhouse pour while trucks 3 and 4 are working on a tunnel pour. The drivers are readily told by the light system whose concrete is in the mixer. When a pour is finished the trucks are reassigned to other pours. Concrete plant includes Johnson automatic batching equipment and twin Koehring 2-cu yd mixers.

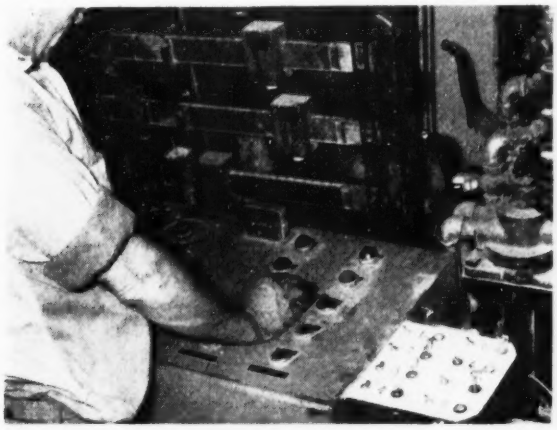
Palisades Dam is essentially an earth fill and there is only about 150,000 cu yd of concrete.

The construction is being done by Palisades Contractors, a joint venture of J. A. Jones Construction Co. and Charles H. Tompkins Co. A. L. Pauls is project manager, Paul H. Swanson is assistant project manager, and W. J. Kennish is general superintendent.

The job is a Bureau of Reclamation project with L. B. Ackerman as construction engineer.



LIGHTS ON CONCRETE PLANT at Palisades Dam signal which of several concrete carrying trucks should run under plant for load. Job includes many small pours, and specific trucks will be assigned to a pour until it is completed. Light system assures the right truck of getting the right mix. (CM&E photos)



TOGGLE SWITCHES at concrete plant operate panel control lights that signal concrete trucks. Thus operator has complete control of concrete dispatching.

CONCRETE TRUCK DUMPS into 2-cu yd Gar-Bro bucket handled by a Manitowoc 3500 crane for a powerhouse pour. Truck has Dumpcrete hopper on Ford chassis.

# Chipping Machine Cuts Concrete Removal Time

A TWO-LANE BRIDGE carrying U. S. Route 10 over the St. Croix River near Prescott, Wis., was being decked last fall when freakish weather hit. Without warning a below-freezing blast swept down the valley just after the pavement had been poured. In spite of efforts to protect the concrete deck, portions of the surface were frozen.

This year, severe crumbling was noticed in the wearing course across both lanes of one span. Pot holes were beginning to form, so repairs were ordered at once to safeguard the slab from serious damage.

A four-way problem was involved: (1) one lane had to be kept open for traffic; (2) 1½ in. of 4,000-lb-test concrete had to be removed from a 94x20½-ft area; (3) the job had to be done without disturbing reinforcing rods (buried 2 in. deep) or loosening aggregate or damaging the lower part of the slab; and (4) a good bonding surface had to be assured for the repair concrete.

In considering a fast over-all timetable, it appeared that removing the 1½ in. of wearing course and providing a bonding surface for new topping would be the most time consuming. Tests with a 25-hp concrete chipping machine showed that considerable time could be saved over use of air hammers. Also that concrete-removal time could be estimated more accurately if this device were used. Knowing the exact time needed for slab preparation, the contractor could schedule the job so as to use idle Saturdays and Sundays for hardening and curing the concrete.

The idea worked: Surface removal time was reduced from an estimated 12 days to 5 days (2½ 8-hr days per traffic lane), and the entire repair job was completed in only 20 calendar days.

As it turned out, the machine's lateral chipping action eliminated the danger of cracking the 5½-in. slab, cut through aggregate stones but left them tightly embedded, provided an even over-all cut, and left a good surface for bonding with the new topping. Surface preparation was handled by a five-man crew—two on the concrete chipping machine; two on air hammers used at the edge under the guard rail; and one removing the pulverized concrete from the area.

How Eau Claire (Wis.) contractor L. G. Arnold handled concrete removal and other phases of the bridge pavement repair job is shown step-by-step in accompanying photographs.

JOB CALENDAR

| Sun. | Mon. | Tues. | Wed. | Thurs. | Fri. | Sat. |
|---|---|---|---|---|---|---|
| | | Job starts → | | R | R | |
| | R,P | P | P,C | H | H | H |
| H | R | R | R,P | P | P,C | H |
| H | H | H | ← Job finished | | | |

R-Remove deteriorated concrete
P-Preparation, (forms, equipment, etc.)
C-Concrete placing
H-Hardening of concrete

**JOB CALENDAR** shows how lane-at-a-time repair procedure stretches job out, but it prevents detour. Good scheduling lets all but two of 20 elapsed days be used for some phase of the operation.

**1** CONCRETE IS REMOVED to depth of 1½ in. by Tennant 25-hp chipping machine, whose use cut estimated 7 days from deck repair job. It takes only 40 hr to chip top from 94x20½-ft area.

**4** JOINT IS SAWED by Clipper machine at rate of 4 ft per min to make sharp, clean shoulder to a depth of 1½ in. Rear lane already is open to traffic after shallow concrete resurfacing.

**7** CONCRETE IS MIXED off end of bridge. To reduce shrinkage, 7½ lb of Embeco per sack of air-entraining cement is added to 1:1½:1½ mix. The coarse aggregate is ½-¾-in. and ¾-1½-in.

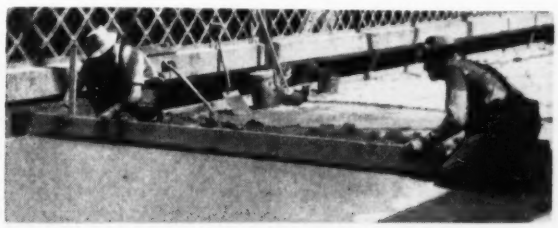
**2** EDGE IS CHIPPED OUT by air hammers from section beneath guard rail inaccessible to concrete chipping machine. Ridge of original material (right) is left temporarily to check depth of cut.

**3** CUT IS CHECKED by foreman Floyd Jensen. Tennant machine takes out strip 4 in. wide, and 1½-in. depth is reached in two ¾-in. passes. Chipping head carries 14 staggered cutters.

**5** SURFACE IS CLEANED by brooming and shoveling chipped concrete into motorized barrow. Seven-man concrete crew will follow: 3 mixing, 1 delivering, 2 finishing, and 1 on odd jobs.

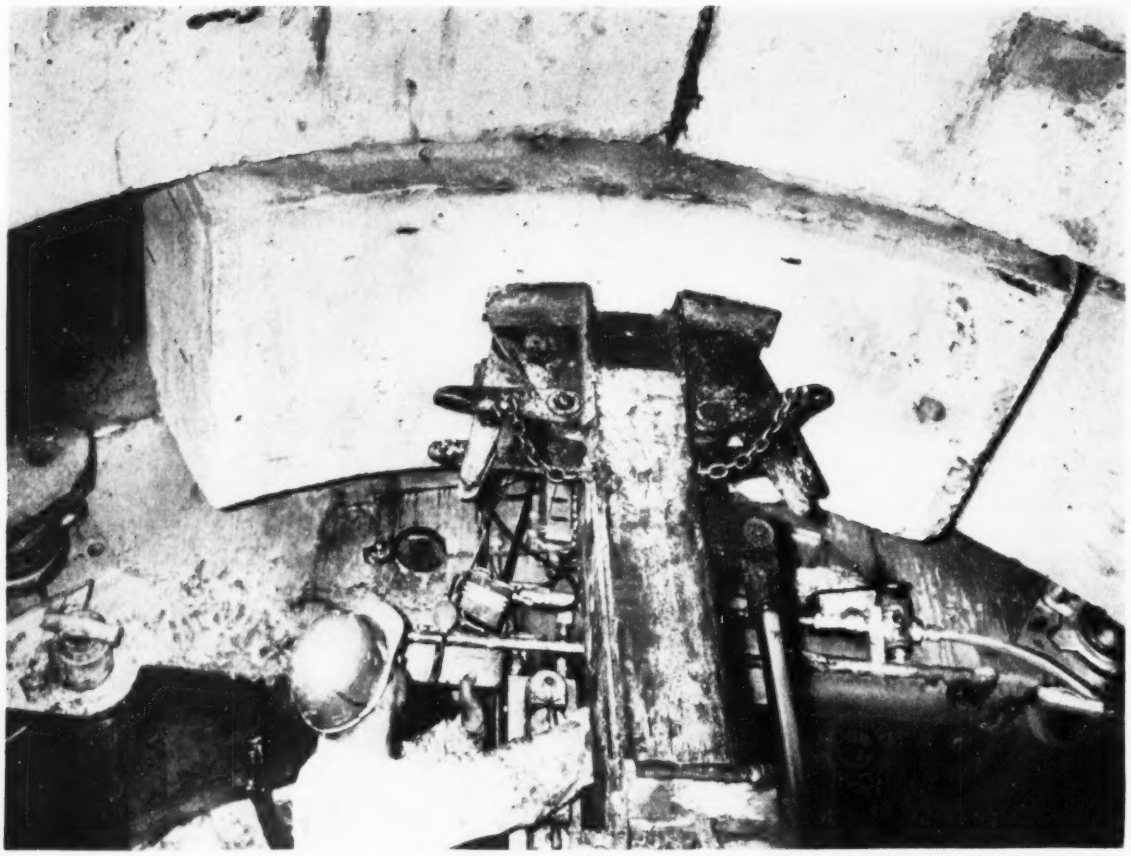
**6** SLAB IS PREPARED for its new concrete topping by brushing with neat cement slurry after chipped surface has been blown clean with compressed air and flushed with stream of water.

**8** MIX IS DELIVERED from mixer to slab 400 ft away by Bell Prime Mover. Contractor estimates this fast-stepping 10-cu ft machine is the equivalent of a three-man wheelbarrow crew.



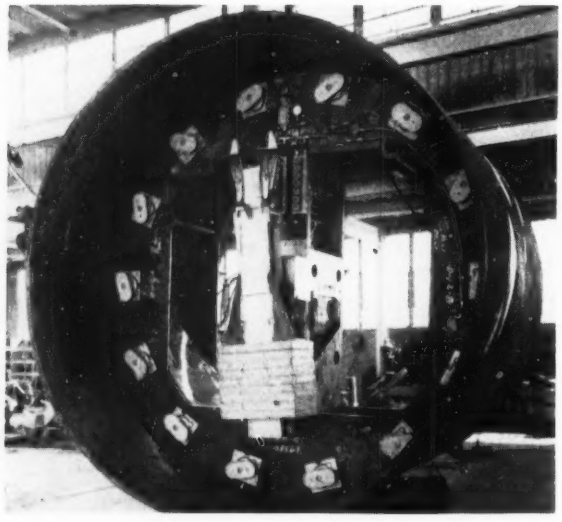
**9** SLAB IS SCREEDED by hand, and will be hand floated and trowelled. Careful mixing and placing prevents honey-combing.

**10** PAVEMENT IS CURED with wet burlap. Application of Embeco Seal-tite, to harden and densify surface, completes the slab repair job. After four days, lane will be opened to traffic.



CONCRETE BLOCK weighing 2,840 lb is fitted into place in Detroit sewer tunnel. Handled by erector arm on tunnel-driving shield, weighty block is 15 in. thick, 30 in. wide, and some 6 ft long. More than 50,000 blocks are needed to line the 19,000-ft tunnel.

# Concrete Blocks Support



TUNNEL SHIELD, shown under construction, carries 14 hydraulic jacks to shove it ahead, and erector arm to set block lining. Steel and timber bulkhead will be placed ahead of main frame.

BENEATH DETROIT there's a lot of messy ground. And a 19,000-ft sewer tunnel with a driven diameter of 14 ft 9 in. is now being pushed through some of the worst of it—a wet and sticky soft blue clay, much the consistency of old tooth paste.

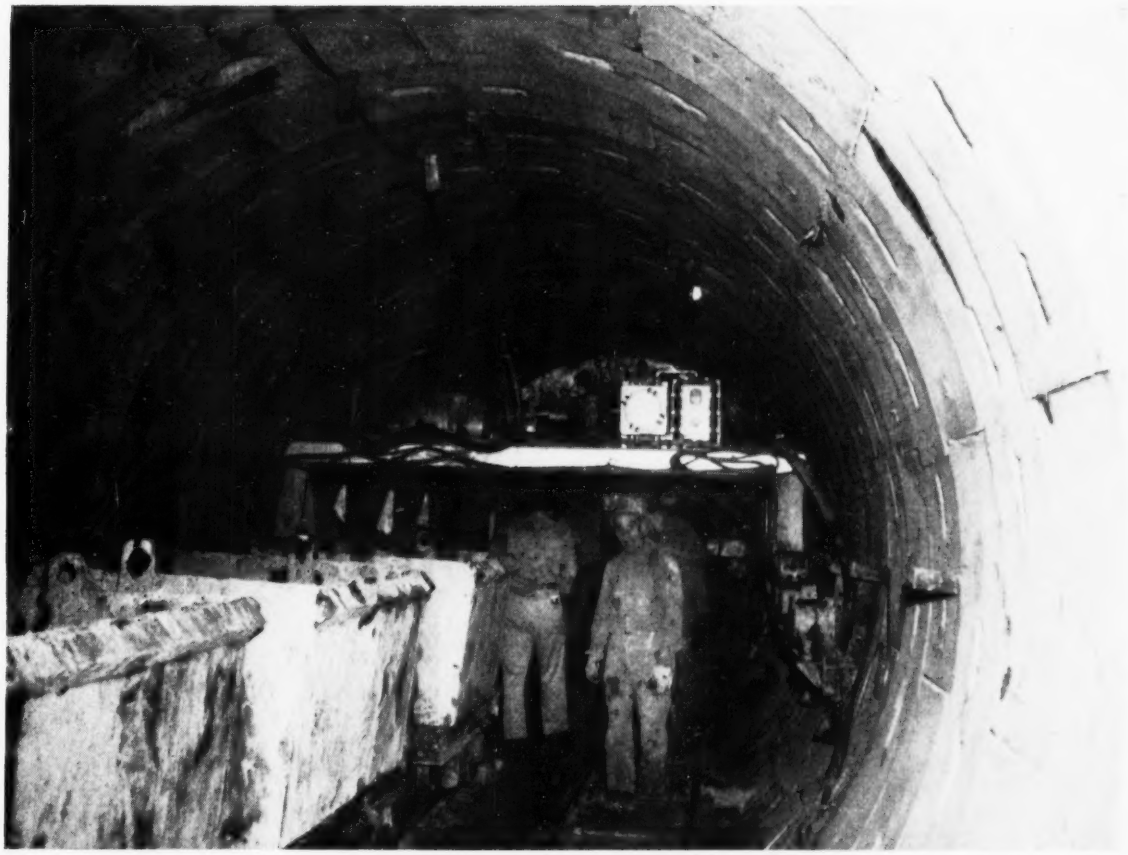
The attack: Headings turned both ways from a single shaft and driven by shields without air.

The ground support, or primary lining: Seven segment rings of precast concrete blocks that weigh nearly 1½ tons each.

The progress: Better than 20 ft per heading per 8-hr shift.

The sewer is the Southfield Section of the city's Northwest Interceptor. Of its 19,000-ft length, almost 25% is on curve. And cover over it varies from 30 ft to as little as 4 ft. The shallow section, unfortunately, is beneath a swamp, so here a clay blanket is being dumped over the line to provide additional cover. Finished tunnel diameter is 10 ft inside an unreinforced poured concrete lining 10½ to 15 in. thick.

The contractor for the $5,300,000 job, Michigan Sewer Construction Co., is driving each heading with a Mayo tunnel shield. The circular unit is 12 ft long, 15 ft 2 in. in outside dia, and has a 14-ft 9-in. clear dia inside the tail. The shield is fitted with fourteen



PRIMARY LINING of precast concrete blocks supports wet and sticky soft blue clay through which tunnel is being driven. Driven diameter of bore is 14 ft 9 in., which will be reduced to 10 ft by these blocks and by concrete finish lining poured later.

# Shield-Driven Tunnel

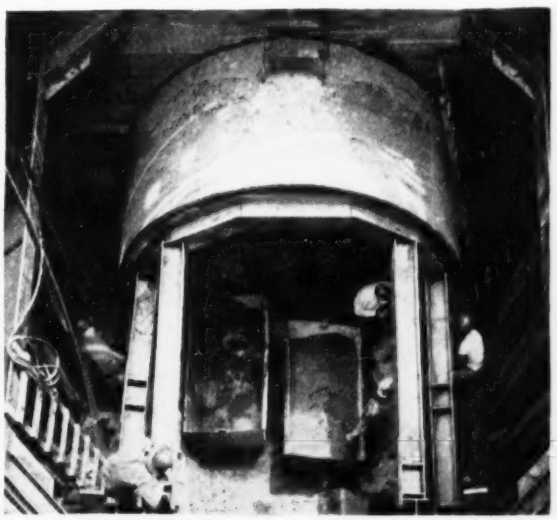
By HENRY T. PEREZ, Senior Associate Editor

150-ton hydraulic jacks for shoving it ahead. With 6½-in. dia rams and better than a 30-in. stroke, these are individually controlled from a central panel so the shield can be guided accurately. A steel and timber bulkhead across the shield behind the cutting edge provides a series of mucking pockets.

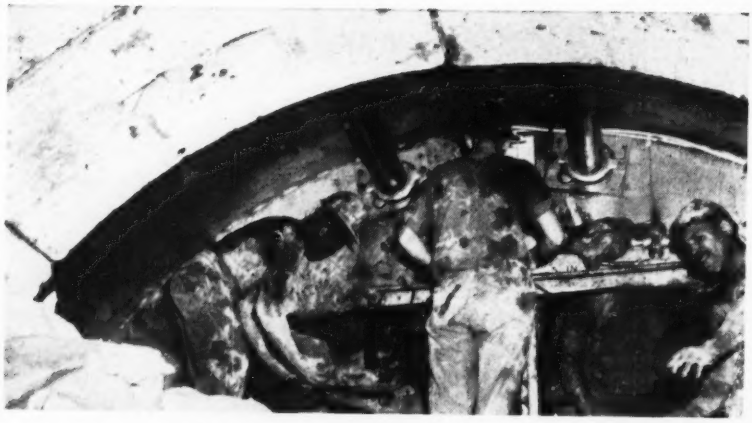
At the rear of the shield is a hydraulically operated erector arm for setting the tunnel lining block. It is pivoted at tunnel centerline for 360-deg vertical swing, and is telescopic to move block in or out radially. One end of the radial arm carries a counterweight. The other is fitted with two curved, movable fingers. These slip into converging holes cored in the liner block and can be locked in place for lifting and handling the block without danger of dropping it.

Power for jacks and erector arm is supplied by two electric-driven Rodgers hydraulic pumps on a following jumbo. Riding on brackets on the tunnel walls the jumbo also mounts a Gardner-Denver air tugger and crane arm for lifting liner blocks from the delivery cars and spotting them for pick-up by the erector. Jumbo platform is high enough to pass muck cars beneath it.

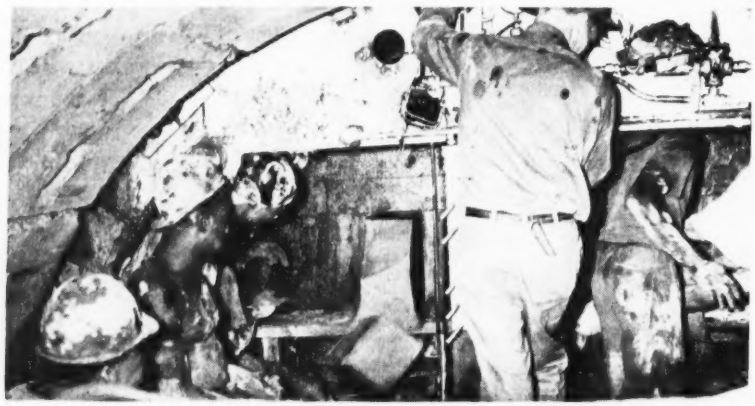
The concrete-block primary lining is of the O'Rourke type — curved segmental units laid up to



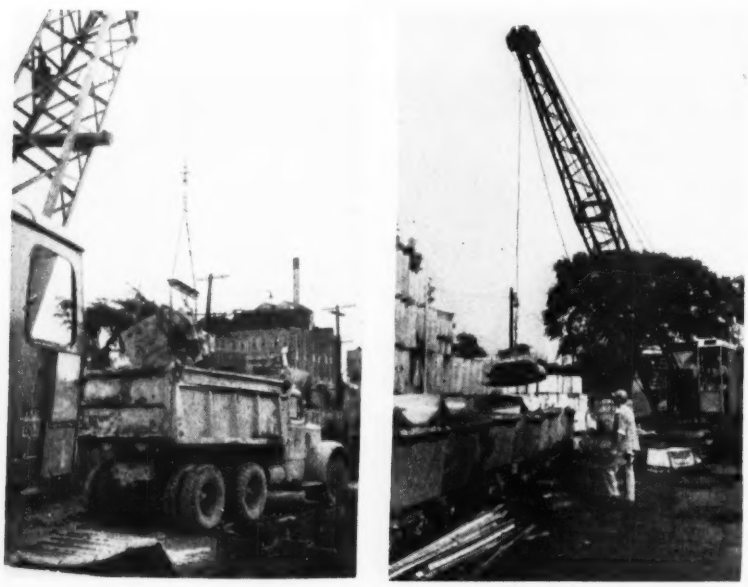
JACKING RING braced to opposite wall of access shaft takes thrust as shield turns the heading at start of job. Shield has already advanced part way through arched concrete portal block.



HYDRAULIC RAMS push against tunnel's block lining to advance the shield 30 in. so next ring of block can be placed. Workers in shield's muck pockets toss clay back into cars.



CLAY RIBBON squeezes into heading through open port in shield's bulkhead as unit is shoved ahead. Two such openings let enough clay into tunnel to prevent heaving of ground over head. Ribbon is cut up into easily handled chunks with simple loop of wire.



ABOVE-GROUND EQUIPMENT includes Northwest crane and Mack truck that handle muck disposal (left), and General crane that loads liner blocks into narrow-gage rail car for delivery to heading. Two of the big blocks make a carload.

make a circular ring, which is keyed with a square concrete peg slipped lengthwise between halves of one two-piece block. Blocks in alternate rings are staggered so there are no continuous longitudinal joints.

The blocks are cast with two kidney-shaped recesses on the leading face and matching projections on the trailing face. The recesses have a dual function: (1) They receive oak shoes on the ends of the shield's rams to provide jacking reaction for the shove and (2) they receive the projections of the next set of blocks to help hold them in place until the ring is complete and keyed. Projections are ¼ in. higher than recesses are deep. Thus, jacking thrust is transmitted directly and only through the kidneys, and there is no danger of cracking the blocks during jacking because of irregular faces.

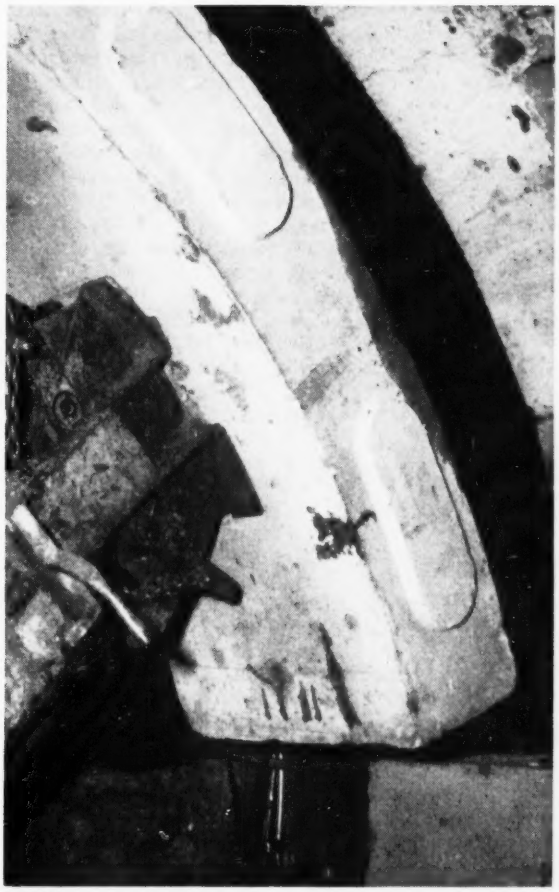
### Seven Blocks per Ring

On the Detroit job, six full blocks and one two-piece key block make a complete ring. Individual units are 15 in. thick (radially), 30 in. wide (along tunnel centerline) and curved outside and inside faces are 6½ and 5½ ft long respectively. Radius of the outside face is 7 ft 4½ in. Weight per block: 2,840 lb.

Leading and trailing faces of the blocks are reinforced with four ⅜-in. round steel bars on 3-in. centers, welded to two radial spacers. This helps take jacking thrust as the shield is shoved ahead. No other reinforcing steel is needed because the set of blocks acts as a ring to take ground pressures.

The 19,000-ft tunnel calls for 7,600 rings. This means a total of nearly 54,000 individual blocks, of which some 10% must be cast with a taper to negotiate curves in the line. To produce this quantity of weighty blocks, subcontractor Lytell & Colegrove of Drayton Plains, Mich., worked up a turntable casting machine that turns out 30 precision-cast units per hr. After curing, they are trucked 40 mi to the tunnel site. And the blocks are so unwieldy that 22 make a complete load for semi-trailer and its following full trailer: 13 on the former and 9 on the latter.

Michigan Sewer Construction Co. began its tunnel job by sinking a 20x27-ft shaft near the middle of the line. To get it down 35 ft through the soft clay, 50-ft lengths of Z-section sheetpiling were driven, then braced by six horizontal steel sets as the excava-



RAISED KIDNEYS on trailing face of block extend 1¼ in., fit into matching recesses 1 in. deep in leading face of previous ring. They help hold blocks until all are erected and the ring keyed.

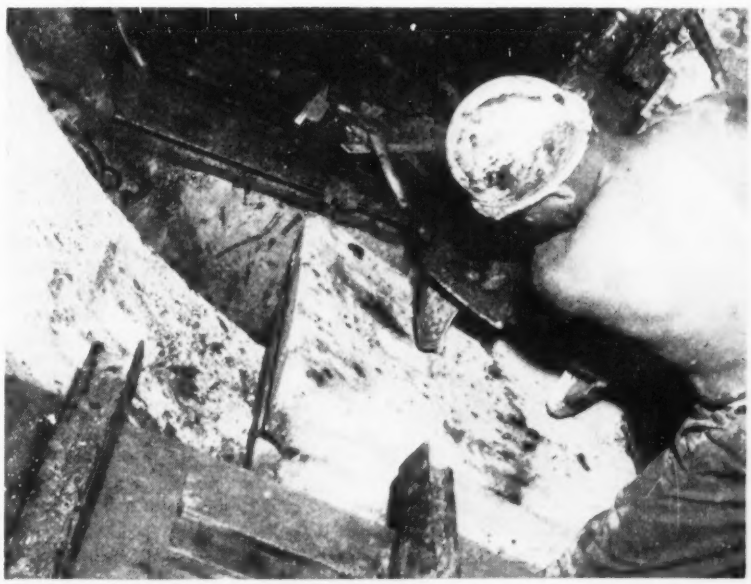
KEY BLOCK is a two-piece affair that goes into ring last. When this half is up, square concrete peg will be slipped between it and its mate to key the entire ring. Note jack holding first half.

tion deepened. A 2-ft concrete mat poured on the bottom made the hole tight and dry.

On the mat, a concrete cradle with four embedded steel rails was built to support and guide the Mayo tunnel-driving shield. And an arched heading portal 4 ft thick was poured just inside the sheeting at the end of the shaft. When the shield was lowered on the cradle, it was advanced through the portal until its circular cutting edge was tight against the sheetpiling of the shaft.

However, there was still a space between the bulkhead in the shield and the sheeting, so this void was packed with clay. Thus, when the sheets behind the portal block were pulled up just enough to clear the shield, the shield could be shoved through the arch to start the tunnel with no loss of ground.

A circular ring of welded beams braced to the opposite end of the shaft provided a jacking reaction for the first few shoves. Now that



ERECTOR ARM is fitted with two movable fingers that extend into holes in block to hold it much as you would a bowling ball. Telescopic arm is operated hydraulically, picks blocks up from tunnel invert and swings them into correct place in lining ring.

PLATFORM JUMBO carries electrically driven hydraulic equipment for powering shield's 150-ton jacks and erector arm. It also carries air-operated crane for unloading liner block. Jumbo rides on roller brackets pinned into handling holes of side-wall blocks.

the heading is well advanced, of course, the shield is shoved by jacking against the last ring of liner blocks erected.

Generally, a heading crew makes 8 or 9 shoves per 8-hr shift and erects a like number of rings of liner block. Average cycle is 55 min—20 to shove; 25 to set block; 10 to move up track, jumbo supports and the like.

While the shield is being shoved ahead by its 14 jacks, clay extrudes into the heading through adjustable open ports in the shield's bulkhead. In the soft blue clay encountered, a 6x12-in. opening on each side of tunnel centerline lets enough material squeeze into the heading to prevent heaving of the ground surface above. At the same time, this develops enough pressure to insure that clay outside will flow to fill the space around the liner block left by the tail of the shield as it advances.

A miner and two muckers work in each of the shield's two pockets whose ports are open. The miner slices the clay ribbon with a wire loop as it pushes in through the port; the muckers toss the cut slabs back into waiting muck cars. One 30-in. shove produces enough clay to fill six or seven cars (2 yd water level, 3 yd heaped).

Muck cars ride narrow-gage rails blocked up above the tunnel invert. Near the face, the line is double tracked to pass cars and to serve both sides of the shield. Muck trains are hauled by Greensburg battery locomotives. At the shaft, loaded muck boxes are lifted from the car frames by a Northwest No. 6 crane on the surface, and muck is dumped into waiting trucks for disposal.

The same equipment delivers liner block to the shield. Loaded two to a box, the units are lowered into the hole and hauled beneath the jumbo. There the tugger-operated crane unloads the blocks, one at a time, into the tail of the shield within reach of the erector arm.

VENTILATING FAN sucks air from the face, discharges it to surface through 12-in. alignment hole. Latter, drilled down every 1,000 ft, will also serve for delivery of pumped concrete for poured finished lining.

The arm picks up a block and swings it into place in the ring after the two jacks at that spot have been retracted to clear it. Then the jacks are pushed out to hold the block while the erector arm is freed to set the next unit. Last one placed, of course, is the two-section key block. However, this need not be at the top of the arch but can be anywhere around the ring because of the hand-inserted concrete peg that wedges the two halves in place. When an entire ring of liner block has been set, the shield is again shoved and the cycle repeated.

As a check on tunnel location, 12-in. dia alignment holes are drilled down from the surface at about 1,000-ft intervals. These also serve as vents to take the direct exhaust from suction fans in the tunnel, and will later be used for delivery of pumped concrete for the bore's unreinforced finished lining.

Kent McIntyre is in general charge of the tunnel job for his firm, Michigan Sewer Costruction Co., Detroit. His superintendent is Tony Skender. For the City of Detroit, William F. Herlihy is resident engineer under direction of Floyd C. Morse, head of the Bureau of Tests and Inspections. John Percival is senior associate civil engineer of construction. George R. Thompson is city engineer and Milton F. Wagnitz is assistant city engineer.

## 10,000 Tons of Gravel Pre-Load Concrete Slab

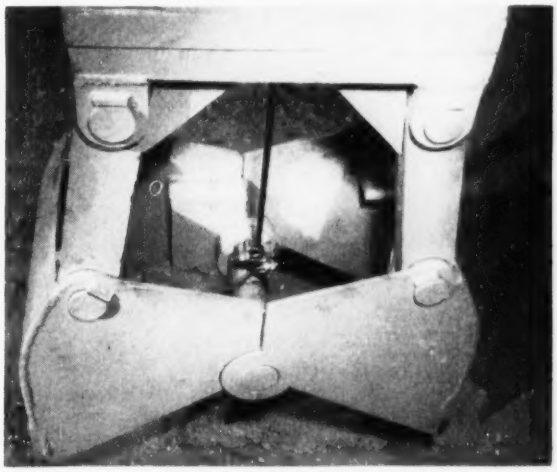
A CONCRETE PAD, 65 ft square and 5 ft deep, for a 120-ft sugar storage silo was completed recently by the Austin Co. in Cleveland for the National Sugar Refining Co.

The concrete base was poured over a 5-ft fill of slag which, in turn, rests on a 60-ft layer of sand over clay. Next, 10,000 tons of sandy gravel were piled on top of the completed concrete foundation —to a height of 26 ft—to compact layers of sand and gravel under the slab. The weight in the preloading approximated loads expected when the silo is fully loaded with sugar.

The idea for pre-loading for permanent compaction came from the project's consultant, Prof. Arthur Casagrande, of the Division of Applied Sciences of the Harvard Graduate School.

THIS "QUICK-WAY" hammer drive bell-hole digger, grapple and material rehandling bucket incorporates a pile-driving principle. Shown here is the hammer drive in a raised position above bucket.

POWERFUL JAWS working as a grapple close on radius from both sides. Single line closing makes for fast digging action with the unit.



TWO METHODS of closing up pull on the bucket are used. One model uses a cable, as shown here, while another uses a firm shaft method. Various size buckets are available.

# "Pile-Driver" Bucket Digs Hard Materials

A PILE-DRIVING PRINCIPLE of operation is incorporated in a bell-hole digger, grapple and material rehandling bucket being manufactured by Quick-Way Truck Shovel Co., Denver, Colo.

The bucket is suspended from a specially designed frame which incorporates a hammer drive. The hammer mechanically lifts and drops with pile-driver action on the frame mounted over the bucket. This action drives the bucket into the material being excavated with the jaws of the bucket open.

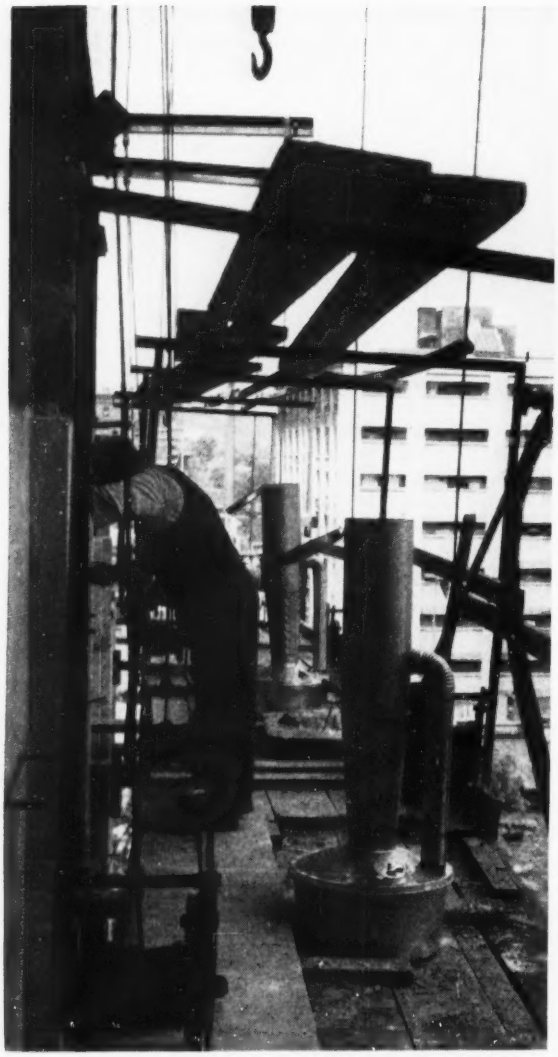
With the jaws in this position, the bucket gets a straight down bite and then powerful clam jaws move in on the radius from both sides which further helps break up the material. The bucket closes with a single line, which the manufacturer claims gives much faster action than a conventional bucket.

When the hammer is not needed, it is bolted to the bucket head and gives some additional digging weight.

There are no sheaves nor counterweights down inside the bucket, and interchangeable hammer weights can be added or taken off to suit individual requirements.

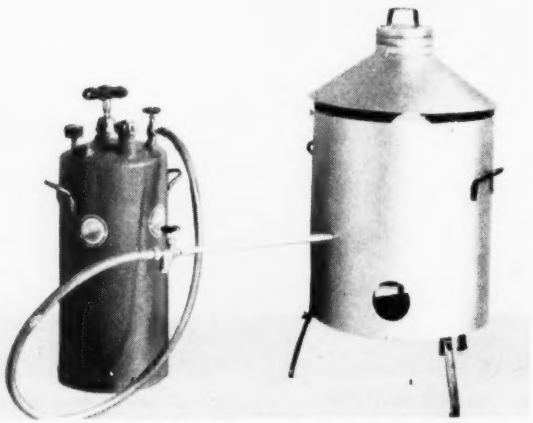
The attachment is made to swivel at different angles for bell holes and street repairs in close quarters.

Equipped with a trench-hoe boom the unit, with extensions, can dig to a depth of 10 ft, or more. When a crane boom is attached, the outfit can dig down to 30 ft. Various size buckets are available, equipped with either jaws as a clam or four jaws as an orange peel for added versatility.



OIL-BURNING SALAMANDERS are versatile. These two HY-LO units are operating outdoors on a swing scaffold several stories up. Return pipe improves fuel vaporization, gives cleaner heat.

SIMPLE AND USEFUL is the California Heater. It must be remembered that salamanders basically have high surface temperatures, must be set clear of combustibles and in ventilated areas.



OIL UNDER PRESSURE from a 10-gal fuel tank feeds to a circular burner inside the Aeroil "firebox." Hood is adjustable for height to aid spread of heat, cap on top removes for flue connection.

# Turn on the Heat

## Part 1*

**Portable space heaters keep construction going in cold weather, keep men and equipment working efficiently. You can analyze your jobs for heat required, decide which equipment, or combination, will be best.**

TEMPORARY HEATING for cold-weather construction is far from an exact science. About the only point on which everyone in the space heating business agrees is that there is much disagreement.

Also it is agreed that contractors are extending building operations right into the winter months and that demands for space heating equipment are on the increase. It all spells a bright future for the portable heater industry.

Heat is required on construction jobs for many purposes: To keep workmen comfortable and producing efficiently; to heat mixers, water and aggregates for concrete batches; to prevent freezing of fresh concrete during curing; keep ground from freezing when preparing for concrete slabs; dry out building masonry units and thaw out frozen piles of sand; pre-heat construction machinery before starting engines on a cold morning; heat warehouses at times; supply heat for winter maintenance of equipment; temporary heat for construction shanties; and the drying of plaster, paint and other wet surfaces.

And there are portable heaters on the market to serve each of

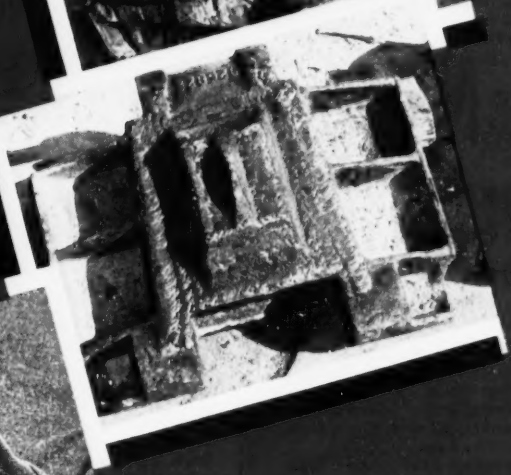
*(Continued on page 68)*

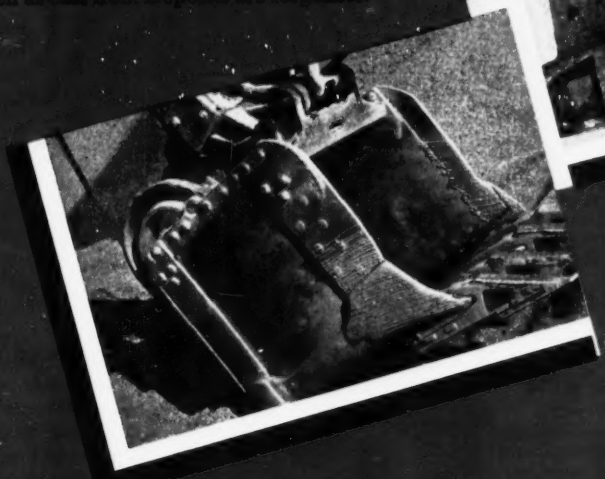
*Part 2 will appear in the December issue of Construction Methods and Equipment.

# For Low-Cost, High Impact Strength

## STOODY 1027

**The *manual* hard-facing rod that cuts wear on EARTH-MOVING, ROAD-BUILDING AND SIMILAR HEAVY EQUIPMENT!**





If you want low-cost wear protection, STOODY 1027 is for you! Here's an all-position AC-DC electrode that lays down a smooth, uniform deposit or can be applied in multiple passes for higher build-ups. Requires no slag chipping between passes. Runs free from slag interference and bonds readily to plain carbon, alloy and manganese steels as well as cast iron. Deposits are forgeable.

**TYPICAL APPLICATIONS**

STOODY 1027 is ideal for manually hard-surfacing large bulky parts too heavy to position for down-hand welding. Typical uses: tractor rollers, bucket sides, drive sprockets, top carrier rolls, idlers, tumblers, track pads, clutches, clevises, sheaves, grousers, gear teeth, etc.

*Ask your dealer for details (see the yellow pages of your phone book) or write direct.*

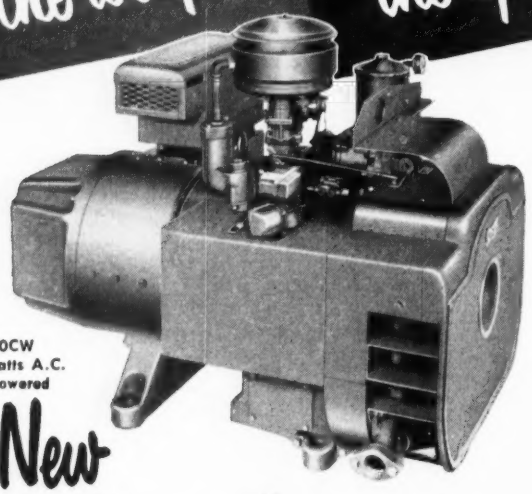
**STOODY COMPANY**

11973 East Slauson Avenue, Whittier, California

# 10,000 WATTS A.C.

with half the weight!

in half the space!



MODEL 10CW
10,000 watts A.C.
Gasoline powered

## the New ONAN "10 CW" Electric Plant

**Check these advantages!**

- ★ High capacity for big jobs.
- ★ Twin-cylinder, horizontally-opposed, air-cooled, alternate-firing engine.
- ★ Aluminum-alloy cylinder heads.
- ★ Extra-large, replaceable bearings.
- ★ Full-pressure lubrication, 6-quart oil capacity, oil filter.
- ★ Impulse-coupled, high-tension magneto ignition; radio suppressed.
- ★ Quiet, vacuum air cooling of generator and engine.
- ★ Excellent accessibility; snap-off housings.
- ★ Extremely quiet running.
- ★ High performance generators.
- ★ Completely equipped with controls and instruments.

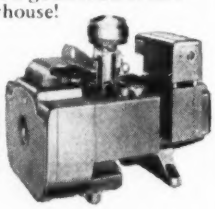
**Costs less than any other complete electric plant!**

You can't match it anywhere in performance, equipment or value. The sensational new Onan *10CW* gives you everything you've wanted in an electric plant plus exceptional mobility for a unit of its capacity.

On large construction jobs, where wattage requirements for power tools are high, or where floodlighting of extensive work areas is essential, the Onan *10CW* delivers all the electric power you need.

Before you buy another electric plant for any purpose, take a good look at this new low-cost powerhouse!

***Model 5CW***
**5,000 watts**
Same advanced design as the 10CW with all its exclusive advantages. Built for heavy duty, economical operation.



*Write for Detailed Specifications!*

Onan ELECTRIC PLANTS

**D. W. ONAN & SONS INC.**

7855 University S.E., Minneapolis 14, Minnesota


### TURN ON THE HEAT

. . . Continued from page 66

these needs. They range from the simple "salamander," cheap in first cost and expendable with little monetary loss, to the large direct-fired and indirect-fired units on wheels that turn out heat like a volcano. These have blowers to distribute heated air within the area directly around the machines or through flexible ducts for spot heating.

Construction jobs requiring winter heat come in all types, shapes and sizes. This complicates the selection of a space heater because the contractor normally expects the units he buys to last for several seasons and serve on more than one job. Thus it becomes difficult to select portable heaters that will serve efficiently under differing operating conditions and on varying types of construction. There is no simple answer.

It is difficult to set down specifications or an exact formula whereby a contractor can estimate how much heat he requires for his particular job. Conditions vary all over the lot, depending upon size of the area to be heated, tightness and types of enclosure, ambient temperatures and type of work.

But things are looking up. Information set down here comes from a goodly number of portable heater manufacturers (named at the end of this article). Assisted by these specifications and suggestions, a contractor should be able to figure his heating needs without being caught short during critical weather or expensively over-equipped at other times.

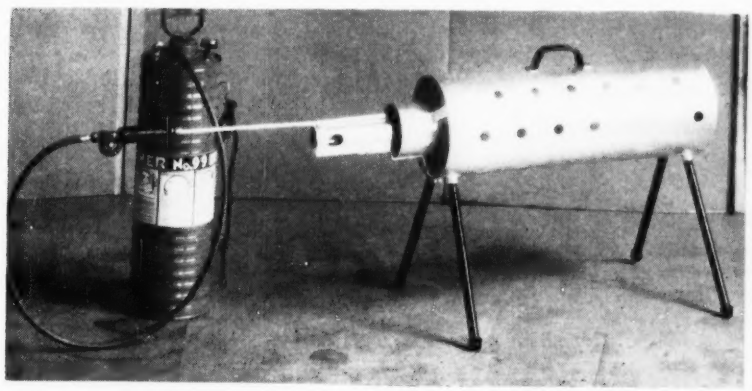
Safety measures to be taken will be discussed farther on. Suffice it to say here that temporary heaters must be well placed and operated and maintained properly to prevent fire and to keep from contaminating the air breathed by workmen with fumes and smoke, or worse, an excess of carbon monoxide.

### The Salamanders

• **A wood fire inside a discarded oil drum** out in an open lot still can be a useful device to frost-nipped men working outdoors in cold weather. But it has no place around flammables and doesn't rate as an effective space heater anyhow. The charcoal burning salamander rates a notch higher, but also is low in efficiency and in the past has caused serious fires.

• **An oil-fired, vertical-stack heater**—built over the top of its oil reservoir — is a logical develop-

LIQUEFIED PETROLEUM gas-fired portable heaters are finding indoor applications. AZCO cabinets provide clean heat, are radiant heaters with some convection effect.



FLAME THROWER TYPE by Aeroil has torch inside perforated burner housing. Torch can be removed for thawing and other uses. Oil comes from 5-gal pressure tank.

ment because the appeal of a simple inexpensive space heater cannot be denied. This is known as a distilling type, to identify it from the well-known portable kerosene heater with a wick. To operate, the oil in the reservoir is lighted and combustion becomes fairly complete as the vapors continue to burn as they race up the stack.

Oxygen enters the top of the reservoir through an adjustable port, and the heater is shut down by closing this port to shut off the air supply. Internally, salamander stacks are not straight pipes but incorporate special flame spreaders and louvers to create efficient combustion, spread heat over a wide area. A unit of this type is made by the California Heater Co.

Another salamander features a return pipe connecting the stack and the top of the fuel bowl. It recirculates some of the hot gases, causing better vaporization of fuel, with resultant cleaner burning, less soot accumulation, less maintenance and greater efficiency over a longer period of time. This is the HY-LO, manufactured by the Scheu Products Co. It is rated at 140,000 Btu per hr.

This popular type of salamander is among the most versatile. It can be used indoors and out, on scaffolds high in the air, in any loca-

*(Continued on next page)*


COMMENT

*from the*

**BUTLER ENGINEER**

**. . . . of Planning Ahead of Your Market**

A man called at Butler Bin not long ago. Told the switchboard gal (her name's Jane, if you want to know) that he wanted to see me.

Said Jane, "May I have your name, sir?"

He replied, "Just tell him I'm the only contractor over 21 *not* bidding on the Ohio Turnpike."

•

As the Butler Engineer I work on small jobs, big jobs, complex and difficult jobs, but the most difficult job I have is to get our customers to let me plan their Ready Mixed Concrete Plants—*not* for the next fifteen minutes but for the next fifteen years.

Since costs for erection, housing, piping and wiring are almost the same for a small Plant as they are for a large one, the actual additional money spent for a somewhat larger bin and more capacity in the elevator and the batching equipment is small indeed when compared with the cost of the fleet that carries the concrete. And, less expensive to plan adequately now than to add capacity later.

As you know, it's the efficient and quick dispatch of trucks through the Plant that spells the difference between nuts or nuggets of gold.

So after determining what is now required for your present market, plan ahead *now* for expansion. The extra money involved is small, efficiency is generally increased and your investment is protected for the future.

Think BIG enough and PLAN big enough with

*The Butler Engineer*

BUTLER BIN COMPANY

WAUKESHA, WISCONSIN

LEADING CONTRACTORS USE McCarthy Drills

PUBLIC UTILITY AUGER DRILL

Bores holes from 4½" to 24" in diameter under sidewalks, roads, building foundations, railroad tracks, landscaped grounds, etc. Fithian Contracting Co., Youngstown, O., using McCarthy Public Utility Auger Drills, completes pipe line jobs, formerly taking weeks, in a few days.

SELF-PROPELLED HORIZONTAL AUGER DRILL

Will bore 6" and 8" diameter holes 120 feet horizontally at rate of six feet per minute maximum. Four individual, self-locking jacks maintain correct drilling level. In one day a New Castle, Pa., operator bored holes of various depths totaling 840 ft. through shale and sandstone, using this McCarthy Auger Drill.

Heavy-Rugged-Powerful

VERTICAL AUGER DRILL

Operating men who have made actual on-the-job tests find the McCarthy Vertical Auger Drill a standout for mobility, stamina, ruggedness and versatility. On a 2-million dollar, 5-mile stretch of superhighway between Hubbard, Ohio, and Sharon, Pa., The Apex Powder Co., Canton, Ohio, cut blasting costs approximately 20% as compared to air, well or churn drilling. Cutting through two large areas of concentrated rock, 150 holes 15 feet deep were bored for each blasting pattern. 3,000 cubic yards of sand rock were moved at each blast. Due to the ruggedness and mobility of McCarthy Drills, there was no time lost. For further information, write Salem Tool Co. and our distributor will contact you.

SALEM

DRILLING EQUIPMENT SINCE 1901

THE SALEM TOOL CO.

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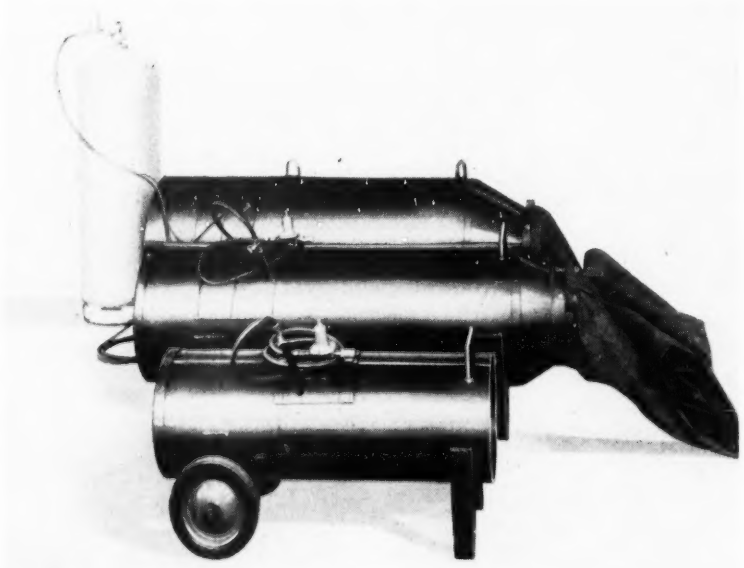
RADIANT HEATERS like this LPG-fired Sonic Ray unit are set up quickly for heat on spot jobs. Men and materials do a better job in winter when reasonably warm.



RECENT DEVELOPMENT are these large Eco-Temp LPG units on wheels. They feature automatic firing and temperature control. Maker claims heat can be spotted by ducts.

tion, is independent of any power supply and can be operated and maintained by unskilled help.

But it must be remembered that the salamander is a radiant heater, heating only the immediate area around it, except for the air heated and stirred up above its stack. When used indoors, it must be placed upon masonry blocks or similar material and combustibles conscientiously kept away from it because of its high surface temperatures.

If the salamander is kept clean

*(Continued on page 76)*

# YOU get more for your money than just a tractor!

When you buy a piece of Cat* equipment, you think of a lot of other things besides tough steel and yellow paint. Things you can't see or feel or touch, but that will help you make *more money this year—and year after year!*

You *know*, for instance, that you can figure closer on a contract, because your equipment will keep you on schedule. Its stamina, *plus* on-the-spot service from your Caterpillar Dealer, cuts down time to the minimum.

You *know* the bank will give you better financing on big yellow machines because of their reputation.

You *know* there are no "orphans" in the line. You can work Caterpillar machines *profitably* for years and *always* get parts for them—at the standard low list price.

You *know* that day after day, week after week, month after month, they will do *more* work with *less* down time at *lower* cost than any competitive units.

And, finally, you *know* that when you're ready to trade in a Cat machine, you'll get more money for it—the *top* resale value in the field.

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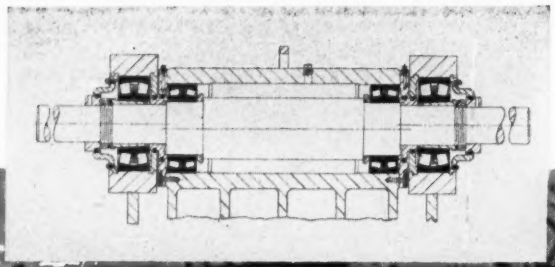
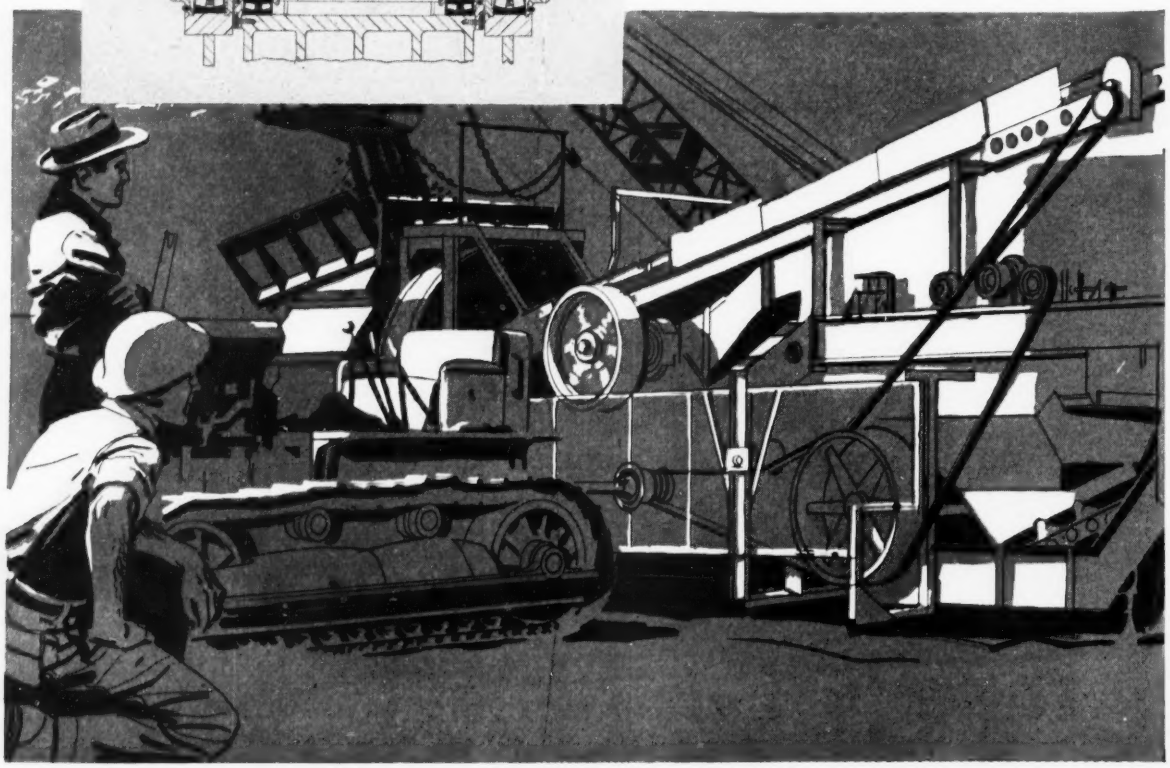
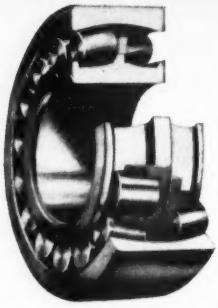
**TORRINGTON BEARINGS AT WORK**



*A 1036 jaw crusher, 30" x 24" roll crusher and 4' x 12' 2½" deck screen—all combined in a portable unit meeting state highway weight limitations—put the Universal Senior "R" Gravelmaster in a class by itself. Jaw crushers in many of these unique units operate with precision-ground, self-aligning TORRINGTON Spherical Roller Bearings.*



# Cutting Costs



# In Crushers!

TORRINGTON Spherical Roller Bearings are cutting operating and maintenance costs in scores of today's largest, most powerful crushers (see typical unit above). Here's how they do it:

First, TORRINGTON Spherical Roller Bearings are inherently self-aligning. They compensate for momentary deflections due to shock loads, run smoothly under severest working conditions.

Second, their high-conformity rollers and races are precision ground from the finest of heat-treated, bearing-quality steels. Friction is held to a practical minimum. Uniform hardness of all load-bearing parts gives longer bearing life.

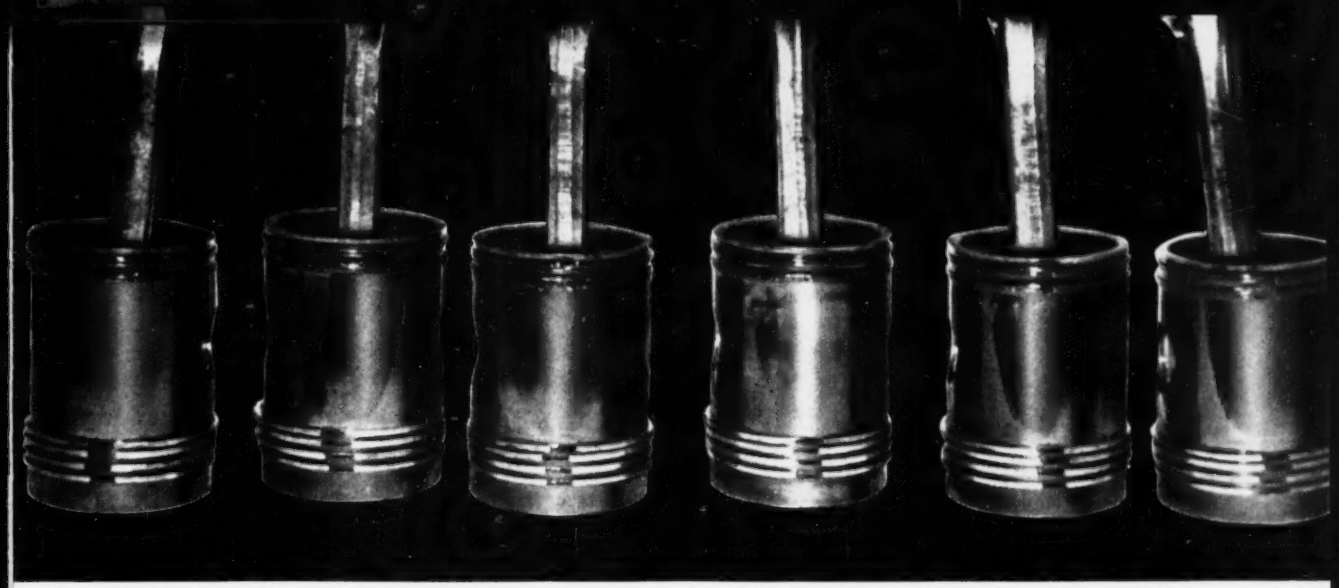
Finally, one-piece, cast-bronze, land-riding cages (one for each path of rollers) assure accurate roller guiding, eliminate roller binding.

These cost-cutting features more than pay their way not only in crushers but also in pulverizers and vibrating screens, grinding mills and rotary kilns. So for *all* your heavy-duty applications, specify TORRINGTON Spherical Roller Bearings!

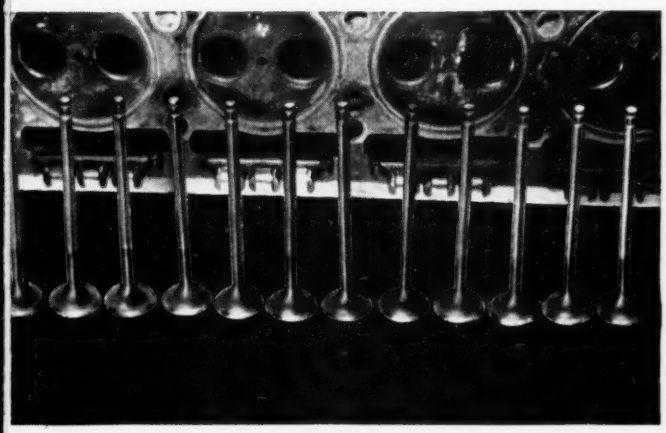
THE TORRINGTON COMPANY
South Bend 21, Ind. Torrington, Conn.

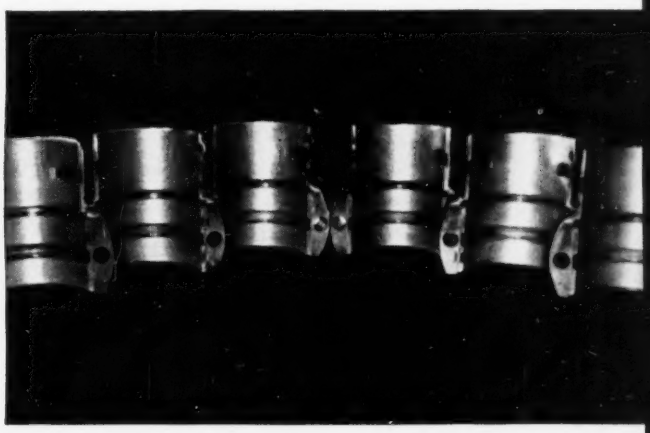
**TORRINGTON SPHERICAL ROLLER BEARINGS**

Spherical Roller • Tapered Roller • Cylindrical Roller • Needle • Ball • Needle Rollers



## Over 100,000 tough miles on these engine parts!





**Here is graphic evidence** of the benefits provided by STANOLUBE HD-M Motor Oil in today's harder-working fleet engines.

The engine parts shown in these unretouched photographs come from a diesel bus unit which has been operated in severe start-stop service for well over 100,000 miles without overhaul. All parts are clean, pistons and valves showing only slight discolorations. Rings are free. Valves are in excellent condition with no signs of leakage. Connecting rod bearing clearances are well within manufacturer's operating tolerances, and bearings are to be reinstalled for further service.

Superior lubrication by STANOLUBE HD-M, together with an effective preventive maintenance program, has kept maintenance costs at a minimum for this midwest fleet of 117 bus units. Diesel engines each average better than 100,000 miles between overhauls. Gasoline engines individually are averaging 125,000 miles between overhauls.

The Standard automotive lubrication specialist serving your area can give you information about use of STANOLUBE HD-M in fleets with which you might be familiar. Phone your local Standard office. Standard Oil Company (Ind.), 910 S. Michigan Ave., Chicago 80, Ill.

**STANDARD OIL COMPANY** STANDARD *(Indiana)*

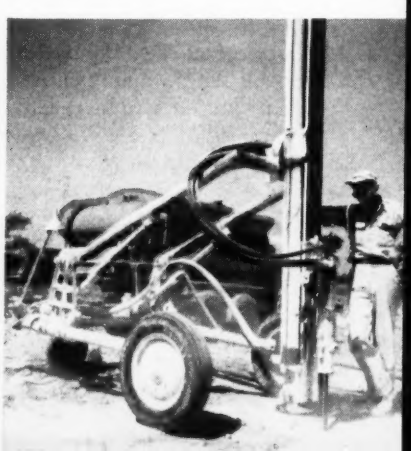
# Le Roi *gives you more for your money!*

## MORE AIR POWER! MORE FOOTAGE! MORE PROFITS!

**Le Roi-CLEVELAND Sinkers** are available in sizes from 18 to 80 lbs., with advantages you want. They use less air. They're easy to handle—operators don't tire easily. And they have what it takes to drill more feet per shift: Strong rotation. Powerful blow. High drilling speed.

**Tractair** is a combination 35-hp tractor and 105-cfm compressor that takes air power anywhere. Here, it operates two Le Roi-CLEVELAND backfill tampers. Can also be used for breaking, drilling — and, when equipped with front-end loader, for digging, loading, lifting, backfilling, snow-plowing, etc. This way, Tractair cuts costs and saves you the extra expense of special equipment.

**Le Roi-CLEVELAND DR30 Wagon Drill** puts deep holes down faster, with less air, than any other wagon drill available. Uses 4" bore Le Roi-CLEVELAND Drifter. Has strong rotation, powerful hole-cleaning ability, and high drilling speed with big bits. For shallow holes, the lightweight Le Roi-CLEVELAND DR34 is available.



# Get air jobs done faster!

## with Le Roi Airmaster Compressors and Le Roi-CLEVELAND Air Tools

**There are 9 sizes of Airmasters** — and 14 models—ranging from 60 cfm to 600 cfm. A 600-cfm diesel unit is shown here. It's got the capacity to operate two deep-hole wagon drills with plenty of air to spare for other tools.

Every Airmaster is powered by a heavy-duty Le Roi engine designed especially for compressor service.

**Le Roi-CLEVELAND Paving Breakers** are available in sizes from 18 to 80 lbs. They really pack a wallop—make short work of breaking up the hardest concrete. Protective air cushion in front end assures long life. Well balanced for easy handling. Operators like them — and get more done.

YOU make the most of air power—speed your work and keep costs down — when you team up Le Roi Airmaster Compressors and Le Roi-CLEVELAND Air Tools. Here's why:

First of all, a Le Roi Airmaster gives you more air capacity for less money. You can get an Airmaster that's *exactly right* for size — one that's not too big or too little for the job to be done — one that lets you do the most work at the least cost. That's because Le Roi has the industry's widest range of sizes to choose from.

You're ahead other ways, too: Airmaster's full-pressure system delivers *all* the air you call for, *when* you call for it. Conservative rating of the Airmaster engine provides ample power reserve — for lower fuel consumption, less maintenance, lower operating costs. Magneto ignition gives you quick, easy starting — saves time — lets you get going faster.

Now, the best way to use the low-cost air produced by Airmaster is to let it power Le Roi-CLEVELAND Air Tools. They're built to really take punishment — and to break more pavement, dig more clay, drill more rock, tamp more fill.

Enjoy Le Roi air-power advantages. Use Le Roi Airmaster and Le Roi-CLEVELAND Air Tools on your next job — and watch costs drop. See your Le Roi distributor. Write for latest bulletins.

Compressors
Rock Drills
Tractair
Engines . . .

**LE ROI COMPANY** MILWAUKEE 14, WISCONSIN

*Plants:* MILWAUKEE • CLEVELAND • GREENWICH, OHIO

### Nation-Wide Sales-Service Network

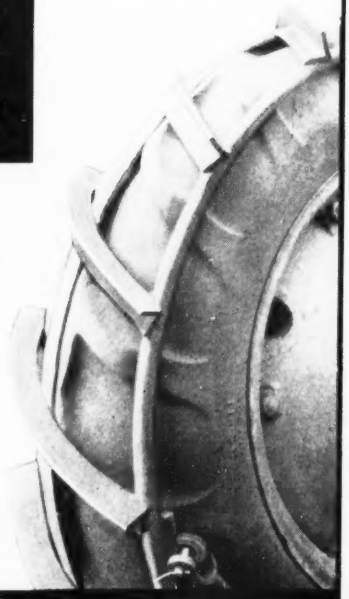
ALABAMA: Birmingham, Mobile — ARIZONA: Phoenix — ARKANSAS: Little Rock — CALIFORNIA: Bakersfield, Long Beach, Los Angeles, San Francisco — COLORADO: Denver, Grand Junction — CONNECTICUT: Hartford — FLORIDA: Jacksonville, Miami, Tampa — GEORGIA: Augusta, Decatur — IDAHO: Boise, Idaho Falls, Twin Falls — ILLINOIS: Chicago — INDIANA: Indianapolis — IOWA: Cedar Rapids, Des Moines, Waterloo — KANSAS: Great Bend, Kansas City, Pratt, Wichita — KENTUCKY: Lexington, Louisville — LOUISIANA: New Orleans, Shreveport — MAINE: Augusta — MARYLAND: Baltimore, Hyattsville — MASSACHUSETTS: Hyde Park, Newton Highlands, Worcester — MICHIGAN: Detroit, Grand Rapids — MINNESOTA: Duluth, Minneapolis — MISSISSIPPI: Jackson — MISSOURI: Joplin, St. Louis — MONTANA: Billings, Great Falls, Kalispell, Missoula — NEBRASKA: Omaha — NEW HAMPSHIRE: Manchester — NEW JERSEY: Cranford, Kingston — NEW MEXICO: Albuquerque — NEW YORK: Albany, Binghamton, Buffalo, Long Island City, Newburgh, Rochester, Saugerties, Syracuse, Whitesboro, Woodside (L.I.) — NORTH CAROLINA: Charlotte — OHIO: Cincinnati, Cleveland, Columbus, Dayton, Toledo — OKLAHOMA: Oklahoma City, Tulsa — OREGON: Portland — PENNSYLVANIA: Bethlehem, Harrisburg, Philadelphia, Pittsburgh — RHODE ISLAND: Providence — SOUTH CAROLINA: Columbia — SOUTH DAKOTA: Rapid City, Sioux Falls — TENNESSEE: Chattanooga, Knoxville, Memphis, Nashville — TEXAS: Dallas, El Paso, Houston, Lubbock, San Antonio — UTAH: Salt Lake City — VIRGINIA: Richmond, Roanoke — WASHINGTON: Seattle, Spokane — WEST VIRGINIA: Clarksburg, South Charleston — WISCONSIN: Milwaukee — WYOMING: Casper.

C-145

IT'S ALWAYS FAIR WEATHER
FOR CONTRACTORS WHO USE

Keep tractors going on mud, soft or icy ground.

MULE FOOT
RIGID STEEL SELF-CLEATING
TRACTOR CLEATS



Builders who operate tractor or other pneumatic tire equipment over open ground are certain to save many lost days and get more done with rugged, deep-bite, rigid steel Mule Foot tractor cleats. Angled so one or more cleats is always in contact with ground.

*Add up to 100% extra tractor production at about 5% of tractor investment.*

A great plus sales product for contractor equipment dealers. Many valuable territories now open. Write for full particulars.

CHESTER PRODUCTS CO. North Fifth & Ford Blvd. Hamilton, Ohio

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Rubber Mounted Base—Standard Model

HEAVY DUTY
FLOOD LAMPS

*For Better Light—Longer Service—Lower Cost*

**Especially Designed for Efficient Service on Shovels, Excavators, Drag-Lines, Roadbuilding Equipment — Locomotive Cranes, Tractors . . .**

STURDILITE Heavy-Duty Flood Lamps provide specially high light intensity and spread, heavily constructed for years of trouble-free service. Hermetically sealed-beam lamp—no reflector to tarnish. Spring-mounted socket. Complete assembly mounted on rubber cushioned base to absorb vibration and shocks. Available in 6-8, 12-16, 24-28 and 110-120 voltages.

*Portable*
**STURDILITE**
New model for inside or outside use. Equipped with convenient carrying handle and substantial pedestal base. Spring-mounted light socket. 4-ft. cord and connector. For all voltages. Weighs only 12 lbs.

SEND FOR ILLUSTRATED BULLETIN
Specifications, Quantity Prices

*Metal Spinning Division*
PHOENIX PRODUCTS COMPANY
4729 N. 27TH STREET, MILWAUKEE 16, WISCONSIN

## TURN ON THE HEAT

. . . Continued from page 70

and in good working order, it should not create harmful amounts of carbon monoxide. But it is vitally important that any heater expelling its products of combustion into a closed area occupied by humans be watched closely and particularly good ventilation provided if the heated area is small. Ordinary care and sensible usage of an oil-burning salamander can keep many construction jobs stepping right along in the dead of winter at a heating cost the contractor can afford.

### Pressure Type

Another oil-burning space heater, the Aeroil, utilizes a circular pressure-type burner installed inside a steel firebox—all mounted on steel legs that raise it well off the floor. This is a radiant-type heater with a hood that can be adjusted to control in some degree the distribution of heat as it is forced up and out under the hood.

Oil is fed to the burner via hose and steel tubing from a steel fuel supply tank with a pressure pump and gage. Kerosene or light fuel oil keep a hot, clean flame going as long as there is pressure in the tank. The Aeroil has provision for connection to a flue.

A simpler version of this salamander is a torch unit similar to a weed burner. The torch is installed horizontally inside a perforated burner housing on four legs, and its heat is distributed laterally through special outlets. Fuel under pressure comes from a lightweight 5-gal corrugated steel tank. The torch is detachable for thawing and other uses.

A modification of the heavy-duty oil-burning torch is adapted for service on concrete mixers. The burner is bolted to the mixer frame and the business end of the torch aimed directly into the mixer drum where aggregates are heated by a 2,000-deg flame. These pressure-type oil-burning heaters are manufactured by Aeroil Products Co., Inc.

• **Gas-fired salamanders** are a more recent development. They utilize liquefied petroleum gases supplied in convenient tanks by commercial distributors. Among the simplest of these is the AZCO space heater, manufactured by the Inland Steel Container Co. to meet the specifications of the A to Z Equipment Corp.

The heating unit is a portable

*(Continued on page 78)*

BIGGEST FORD TRUCK EVER BUILT—New F-900 Big Job is rated for 27,000 lbs. G.V.W. As a tractor with semi-trailer it wheels a 55,000-lb. G.C.W. at a calculated top speed of over 48 mph.

# "I finish a tough day's work fresh as a daisy"

**"Ford's new *Driverized* Cab is the best break we truck drivers ever had!" says Mr. Pelino Fewello, driver for the U.P.K. Construction Co., of Arcadia, California. "Now driving's less work and Ford's easy handling takes the grunt out of backing and filling.**

"Pulling a train of bottom dumps carrying an average payload of 30 tons, I really need a truck that can take a beating and keep on going! My new F-900 BIG JOB with 155-h.p. *Cargo King* V-8 engine has just the 'get up and go' I need. Its terrific lugging power makes light work of heavy jobs.

"And our fast moving Ford Trucks are hour-savers! Time is our biggest problem and all of Ford's time-saving and driver-saving features mean money saved."

**What about you?** Could the time-saving, cost-cutting features of a dependable Ford Truck help you? For complete information write: Ford Division, Ford Motor Co., Dept. T-9, Box 658, Dearborn, Michigan—or call your Ford Dealer *today!*

**FORD** *ECONOMY* **TRUCKS**

SAVE TIME • SAVE MONEY • LAST LONGER

GarWood 75

**New Cranes Designed for More "On the Job" Time!**

Handle all types of precision steel erecting, concrete work and any crane, clam, magnet or dragline job with the new standard-duty 75A or heavy-duty 75B Gar Wood cranes! . . . Collapsible high gantry simplifies raising of longest booms . . . Pendant cables speed changing of boom lengths . . . Optional *power load lowering* and *fluid coupling* give smoothest possible crane operation . . . Hammer head boom point keeps cable away from boom — gives added boom strength — keeps cable costs low . . . Crane sections pin and bolt connected for rigidity and strength . . . Right angle drive, power actuated hoist clutches and conical hook rollers . . . Easily converted to all attachments including the new, exclusive Gar Wood Foundation Borer!

**FOR LIFTING POWER with MOBILITY**

**A Gar Wood 75BT truck crane will do the job. Lifts up to 40,000 lbs. Has all the heavy-duty features yet gets around fast. Ideal for long boom and steel erection work.**

GAR WOOD INDUSTRIES

**GAR WOOD INDUSTRIES, INC.**

Findlay Division • Executive Offices • Wayne, Michigan

F-532


## TURN ON THE HEAT

. . . Continued from page 76

cabinet resembling an oversize temporary room heater used in homes and offices. The burner inside is well protected, and the sturdy cabinet is designed to give a considerable convection effect, in addition to its natural radiant heat. The maker rates AZCO heat output at 50,000 Btu per hr.

Another LP gas-burning portable space heater is the Sonic-Ray, manufactured by the Bica Co. The burner is contained inside a preheat inner chamber surrounded by a circular heavy steel body designed to throw heat outward and downward. For more permanent installations, Sonic-Ray heaters can be operated from city gas lines. Two basic sizes turn out 50,000 and 85,000 Btu per hr. Most models are equipped with automatic safety shut-off valves.

Larger LPG portable heaters—on two wheels for easy portability—have just been put on the market by Arthur C. Baumann. Not much information has been released, but the maker states that his Eco-Temp heaters feature automatic firing with a quick temperature rise and enough heat to serve a large area. Units can be furnished in three sizes for construction 140,000, 250,000 and 500,000 Btu per hr, the manufacturer claims. Vinyl-coated canvas heat ducts are available for spot heating.

• **Forced air portable heaters** have power-driven blowers to spread heated air over an area much greater than a single salamander can cover. There are two main types: Direct-fired and indirect-fired. Their construction and uses will be discussed in detail in the December issue. Also, comparisons between all types of portable temporary heating equipment under various operating conditions will be given.

### Facts for Figuring

• **Productivity and efficiency** of space heaters are rated by heat output—measured in Btu's (British thermal units). One Btu is the amount of heat required to raise the temperature of 1 lb of water 1 deg F. If this occurs in 1 hr, it represents 1 Btu per hr. To raise 1 cu ft of air 1 deg F, approximately 0.018 Btu is required.

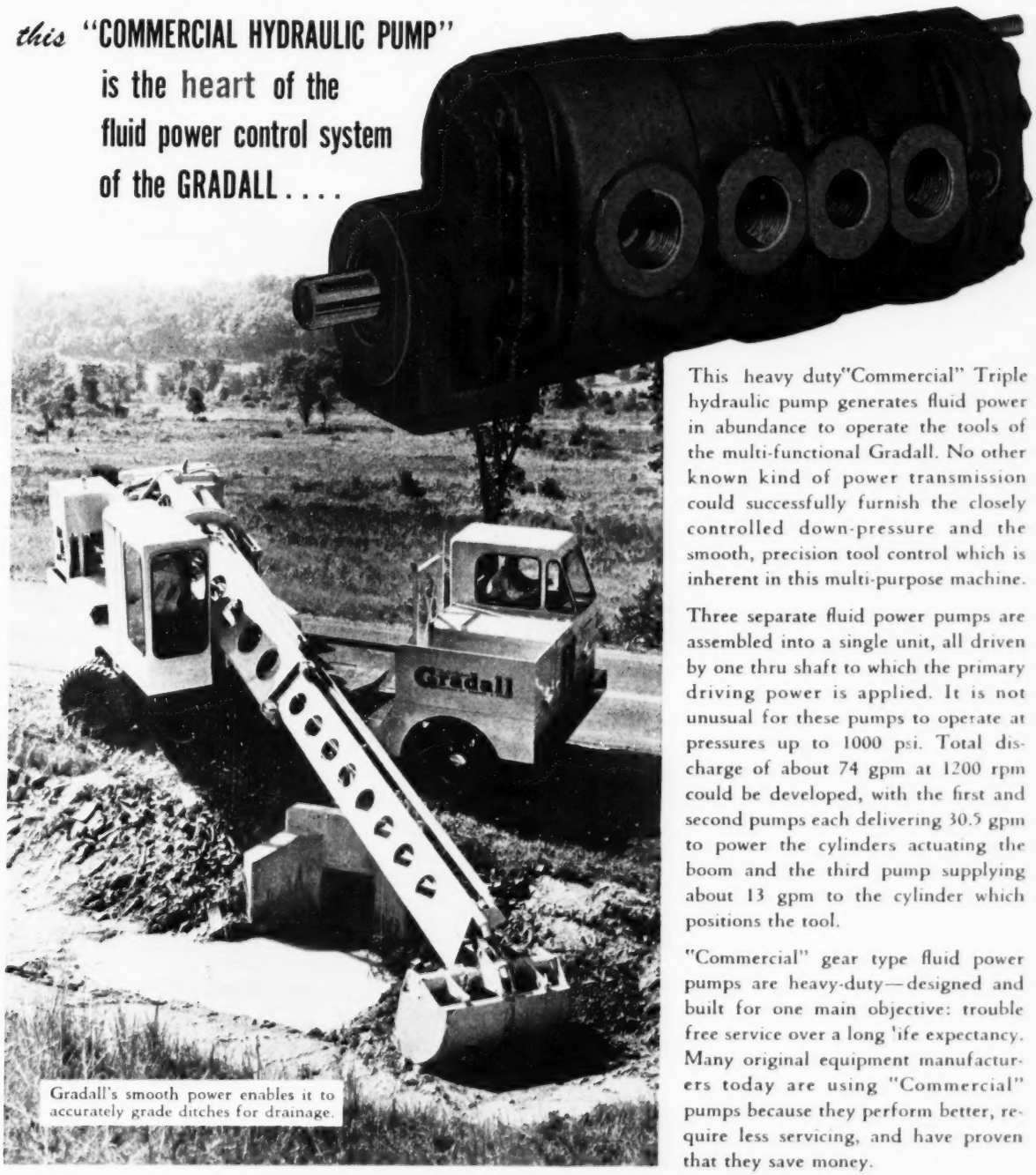
Heat values of the various fuel used in portable heaters for construction are approximately:

| | | |
|---|---|---|
| No. 1 Fuel Oil | 19,000 Btu/lb | (135,000 Btu/gal) |
| Kerosene | 19,500 Btu/lb | (134,000 Btu/gal) |

*(Continued on page 80)*

# POWER PACKED
## *with* HYDRAULIC PERFORMANCE

*this* "COMMERCIAL HYDRAULIC PUMP" is the heart of the fluid power control system of the GRADALL....




Gradall's smooth power enables it to accurately grade ditches for drainage.

This heavy duty "Commercial" Triple hydraulic pump generates fluid power in abundance to operate the tools of the multi-functional Gradall. No other known kind of power transmission could successfully furnish the closely controlled down-pressure and the smooth, precision tool control which is inherent in this multi-purpose machine.

Three separate fluid power pumps are assembled into a single unit, all driven by one thru shaft to which the primary driving power is applied. It is not unusual for these pumps to operate at pressures up to 1000 psi. Total discharge of about 74 gpm at 1200 rpm could be developed, with the first and second pumps each delivering 30.5 gpm to power the cylinders actuating the boom and the third pump supplying about 13 gpm to the cylinder which positions the tool.

"Commercial" gear type fluid power pumps are heavy-duty—designed and built for one main objective: trouble free service over a long life expectancy. Many original equipment manufacturers today are using "Commercial" pumps because they perform better, require less servicing, and have proven that they save money.

Write for Catalog H-7 second printing.

THE "COMMERCIAL" SHEARING AND STAMPING COMPANY
YOUNGSTOWN, OHIO
CHICAGO, ILLINOIS
SALT LAKE CITY, UTAH

| | |
|---|---|
| Gasoline | 20,000 Btu/lb (128,000 Btu/gal) |
| LP Gas | 21,500 Btu/lb (100,000 Btu/gal) |

It appears from specifications and ratings given to heaters that most manufacturers believe these fuels can be burned with about equal combustion efficiency. The way to compare heating costs would seem to be by comparing heat content of the fuels. By using the heat value table above and applying local costs of these fuels, it should be possible to figure comparative costs per 100,000 Btu's, for example.

It would seem then that a contractor can easily figure heating costs when he sees manufacturers' heat output ratings and quickly decide which type and how many units to buy. But the solution is not so simple. Hourly ratings are based invariably on heat liberated at the burner. Distribution and circulation of the heated air differs by heater make and model and here is where much of the disagreement between manufacturers occurs.

So the contractor probably will have to rely pretty heavily upon on-the-job demonstrations by his equipment distributor. But he needs a jumping-off point. To get him off to a good start, a salamander distributor, R. P. Lion of the Stilcon Sales Corp., Long Island City, N.Y., has this to say:

"Past experience and trial and error are the basis for most heat requirement estimates, and these are often surprisingly accurate. Nevertheless, they can be wrong and costly. With a few readily obtainable facts about the job and a knowledge of the output of the heaters available to him, the contractor can quickly and accurately estimate his heating requirements by applying the simple mathematical formula known as "Mill's Rule" given below.

"To calculate the heat needed to balance the heat loss from an enclosure, in other words, to maintain a desired temperature within the enclosure, the following rule-of-thumb formula can be applied:

$$Hn = \left(\frac{G}{2} + \frac{W}{20} + \frac{WI}{2} + \frac{W2}{1.5} + \frac{V}{200}\right) \times 3.57 \times (ti - to)$$

Where: Hn = heat needed, in Btu per hr
G = window (glass) area in sq ft
W = average type wall area, in sq ft
WI = canvas wall area, in sq ft
W2 = galvanized iron wall area, in sq ft
V = volume of enclosure, in cu ft
3.57 = factor of convert to heat needed per degree temperature rise
ti = inside temperature desired, in deg F
to = outside (ambient) temperature, in deg F

"Floors and ceilings should be included as wall areas, if they are exposed to unheated spaces below or above. For example, in a one-story structure, the roof is considered as part of the wall area. In a two-story, unheated structure, the first story should include the ceiling as wall area, providing the second story is unheated. On the second floor, both the floor and the ceiling are considered as wall areas, providing the story below is unheated. If the story below is heated, then the second story would include only its ceiling as wall area.

"Factors shown in the formula which do not apply should be dropped. For example, if glass does not constitute a part of the building, $\frac{G}{2}$ would be eliminated."

• **The fire hazard** with oil- and gas-fired salamanders is practically non-existent when good management prevails on the job. Con-

It takes a FULL team
. . . whether it's mushing
. . . or digging equipment
1. This is for big jobs
2. This is for medium jobs
3. Sherman for all other jobs
On many excavating jobs the use of big equipment is costly and time-consuming. The Sherman Power Digger is designed so that you get all the advantages of power digging on these jobs. Thousands of users have proved that the Sherman Power Digger reduces costs. Write today for descriptive literature U48.
Designed, Engineered and Manufactured Jointly by
SHERMAN PRODUCTS, Inc.
Royal Oak, Michigan
WAIN-ROY CORPORATION
Hubbardston, Mass.
Patent No. 2,303,825
Other patents pending
Sherman
PRODUCTS, INC.
ROYAL OAK, MICHIGAN

versely, in careless hands, any heater can be a potential hazard. The Herman Nelson Division of the American Air Filter Co. volunteers these approximate ignition temperatures for some common materials found on construction sites:

| | |
|---|---|
| Paper, newsprint | 446 deg F |
| Wood shavings | 475 |
| Excelsior | 464 |
| Burlap | 452 |
| Kerosene | 490 |
| Turpentine | 464 |

Since many radiant type portable heaters have high surface temperatures, it is important that combustibles be kept at a safe distance. And don't forget to check overhead before heat is sent pouring out of the stack.

Acknowledgment with thanks to the following manufacturers for their fine cooperation in the preparation of this timely article:

Aeroil Products., Inc., South Hackensack, N. J.
Arthur C. Bauman, Philadelphia, Pa.
The Bica Co., Girard, Ohio
California Heater Co., Pomona, Calif.
Cleaver-Brooks Co., Milwaukee, Wis.
Dravo Corp., Pittsburgh, Pa.
Herman Nelson Division, American Air Filter Co., Inc., Moline, Ill.
Inland Steel Co., Chicago, Ill.
International Manufacturing Co., Denver, Colo.
Littleford Bros., Inc., Chicago, Ill.
Master Vibrator Co., Dayton, Ohio
Modine Manufacturing Co., Racine, Wis.
Scheu Products Co., Upland, Calif.
Silent Glow Oil Burner Corp., Hartford, Conn.
The Trane Co., La Crosse, Wis.

ROSCO'S P.M.*
makes the difference

*P. M. = Pressure Metering

**Applying bitumen through 2 feet of spraybar** as shown may not appear unusual or different, but when the operator can use any length—from 1 to 24 feet—*without changing the pressure* and *without any application adjustment whatever* . . . then there's a difference. It's *Rosco's Pressure Metering Method* that makes that difference.

The P. M. method of applying bitumen is *not* metered by the bituminous pump, nor is the amount of discharge measured in relation to the pump revolutions. Normal wear of the pump and occasional, unavoidable nozzle clogging never affect the application rate. Here again, Pressure Metering *makes the difference* . . . the rate is automatically maintained by Rosco's P. M. system.

It is this Pressure Metering Master Valve, the "heart" of Rosco Distributors, that gives you this built-in control of pressure which is the only accurate method of obtaining precise bituminous application. This is the valve that also directs the flow of material for all of the Rosco Distributor functions.

Make the difference pay off. Let your Rosco dealer show you how. Write the factory for descriptive bulletins with specifications of Distributors with P. M.

•

ROSCO MANUFACTURING CO.
3118 Snelling Ave. • Minneapolis 6, Minn.

# NEW!

**EIMCO 105's are new equipment for mining, construction, quarry, tunneling, logging, oil fields, farming or any job requiring a thoroughly tough unit as a prime mover, bulldozer, or loader.**

**Machines are designed, usually, for a weight limit to sell at a price OR THEY ARE DESIGNED FOR SERVICE. EIMCO machines have always been designed for service — weight and price receive no consideration. The result in this case is a unit designed to give maximum life — (3 to 4 times more than ordinary equipment in the same class) — with minimum maintenance attention. Trouble free service for many years on the job.**

**Construction is rugged, with each piece designed for maximum loading conditions — using the most modern metallurgical research and best in tooling and equipment. Each part is processed to give it toughness and hardness in the right places.**

**On the EIMCO 105 you'll find no weak spots designed to produce repair parts sales. No bulk weight spots to provide "cheap beef". Every part is functional — made of steel — fabricated, or alloy steel forgings and castings. The 105 is powered to give maximum effective use of every ounce of energy applied.**

**See this unit in action — operate it yourself. There is nothing like it anywhere! You'll be amazed at the easy controls, the performance — the simplicity. Write for more details.**

The Eimco Corporation, manufacturers of heavy mining, construction and processing equipment and has been serving industry since 1884. With its own complete manufacturing facilities, which include iron and steel foundries, steel fabrication shops, forge and press shops, complete machine and assembly shops, laboratories, research, testing and process development departments, Eimco controls the importance of the product from [illegible] of the raw materials to [illegible] of the finished product.

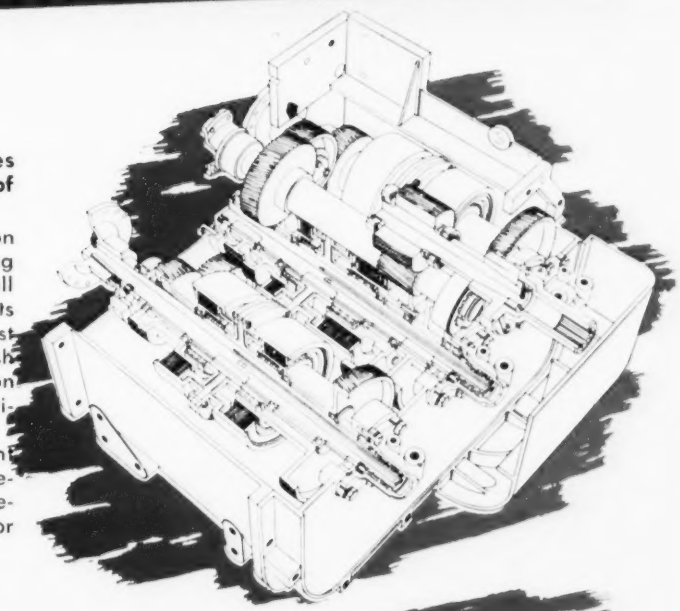
## LOADER—WITH COST-SAVING ADVANTAGES

### NEW Eimco Transmission:

**Eimco's great new Unidrive achieves supremacy in engineering advancement of tractor power transmissions.**

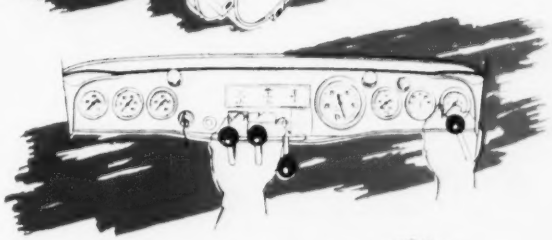
The Unidrive is a compact transmission containing in one unit all of the gearing and clutches for speed changing and full independent reversal of each tracks. Its unique design combines all of the best features of torque converter, constant mesh gearing, hydraulically actuated friction clutches and sealed oil bath, pressure lubrication of all wearing parts.

The oil-cooled, positive engagement clutches never need adjustment. The precision helical gearing is alloy steel, carefully heat-treated and micro-shaved for years of quiet operation.



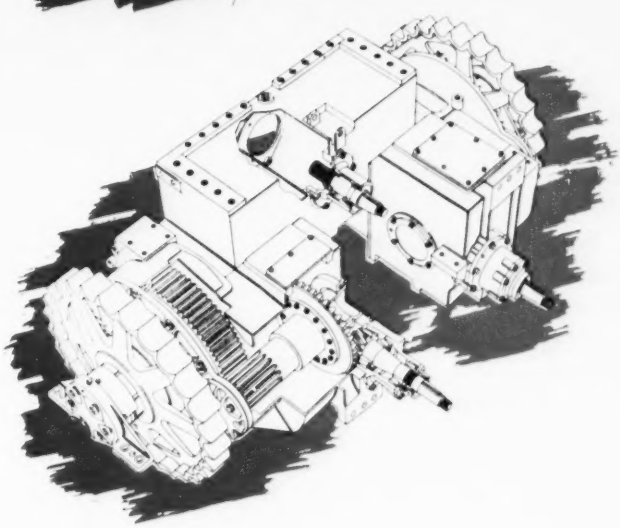
### NEW Controls and Instruments:

The Eimco 105 may be operated by one hand covering two small levers. Push for forward motion, pull for reverse motion. Each lever controls the track on its respective side, a twist of the wrist starts one track in forward motion and the other in reverse for a spin turn or release one handle and it will automatically return to neutral for a gradual turn. Attachments, such as the Eimco loader can be operated by the other hand.



### NEW Final Drive:

Each track is equipped with its own final drive in a cast steel case with a cast steel cover. These final drives do not house clutches or troublesome gadgets. They are sturdy heavy-duty parts carefully machined for silent operation and long service under unusually difficult job conditions.



### NEW Many Other Features:

There are many other features in the 105 such as: instant reverse at all speeds, torque converter cushioned drive, air cooled precision disc brakes, all metallic clutch facings, full flow oil filters, force feed lubrication, adjustable digging depth stops, variable height discharge, 1½ to 2½ cubic yard buckets and many others.

THE EIMCO CORPORATION
Salt Lake City, Utah, U.S.A.
Export Office: Eimco Bldg., 52 South St., New York City

# Freeze Wet Ground to Sink Deep Shaft

A BATTERY of water-well drills is putting down 28 holes in a 32-ft dia ring near Windsor, Ont. But the holes are not to get water; they're to stop it. A refrigerating solution of brine will be circulated through pipes placed in the 720-ft deep wells to freeze the wet ground around them. Then a 16-ft shaft, which might go as deep as 1,100 ft, will be sunk in the center of the circle to tap a rich salt bed—the goal of the entire operation.

Due to difficult water conditions underground, Canadian Rock Salt Co. Ltd. decided to have its shaft, at Ojibway, sunk by the "freezing method." This method was developed by Winston Bros. Company and used successfully by them on other similar projects. At the proposed salt-mine shaft site, exploratory drilling disclosed mixed overburden from grade to 90 ft below, limestone to –365, sandstone to –445 and mixed limestone, shale and sandstone below that.

COVEY OF WELL RIGS sinks a ring of 720-ft holes through which iced brine will be circulated to freeze an ice wall around site of Canadian salt-mine shaft. Wall will stop water inflow during shaft sinking. Four of the rigs are Keystones, one is a Speed Star.

### Wall of Ice

At –210, in porous strata of limestone, water under pressure was encountered. It gushed from the surface at 1,200 gpm under a 16-ft artesian head, and released dissolved hydrogen sulfide and methane gasses. Additional, though smaller, water sources were found at other depths. Winston's method is to seal off all this water with a circular wall of ice down to the 720-ft depth.

First step was to drill a relief well in the center of the shaft site. This is being pumped to lower the head while the rest of the holes are put down around it. Later, while the wall is being frozen, it will relieve squeezing pressure in the core and prevent heaving.

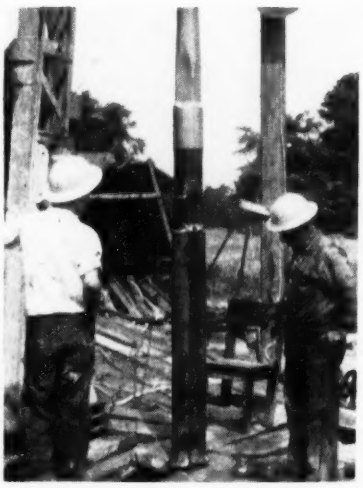
The 28 freeze holes are being drilled in a 32 ft dia circle around the relief well. This puts them on about $3\frac{1}{2}$-ft centers, which is close enough so that their freeze patterns will overlap to make a solid ring. Drilled by five ordinary well rigs, freeze holes are going 720 ft deep, which is below the known water-bearing strata.

Through the 90 ft of unstable overburden to rock, holes are 12 in. and cased with 10-in. pipe. Below that they are drilled with 10-in bits and left uncased. Careful drilling and frequent checking are necessary to insure that a proper freeze pattern will result. But even so, the five machines put down an average total of about 100 ft of hole per 24-hr day.

When all holes have been completed, 6-in. seamless pipe, closed at the lower end, will be inserted full depth. A 2-in. pipe will extend almost to the bottom inside the 6 in. tube, and brine cooled to –20 deg in a 200-ton refrigeration plant at the site will be pumped down. Then, flowing up between the two pipes, the brine will freeze a circular ice wall.

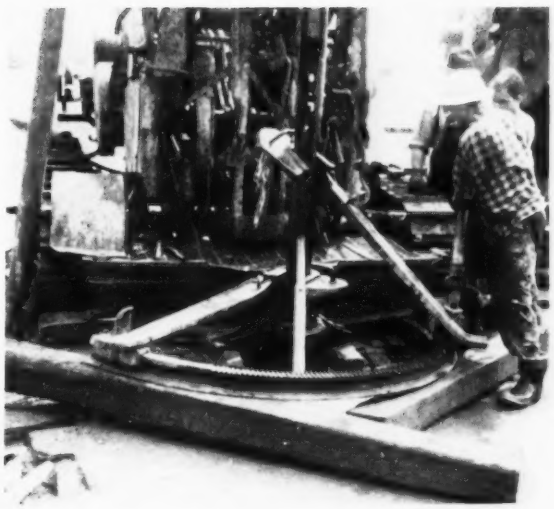
Thermocouples placed at various

*(Continued on page 88)*



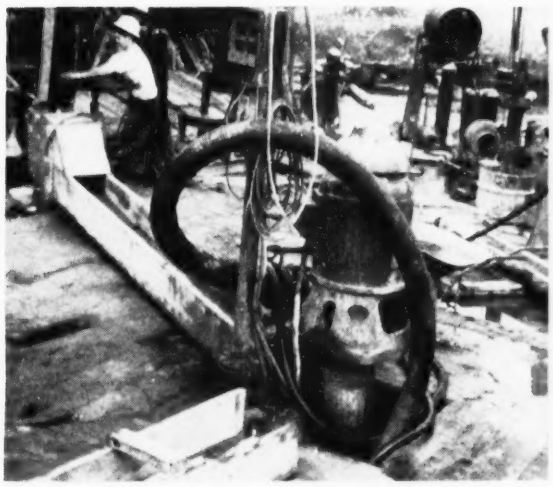
BIG DRILL BIT seems to dwarf drillers as they inspect it prior to bailing hole. Bit itself is 7 ft high, weighs about 1,200 lb.

SECTION OF STEEL CASING, is added as hole advances through 90 ft of unstable overburden. In rock below, holes are uncased. The 28 holes drilled in 32-ft dia ring are on 3½-ft centers.



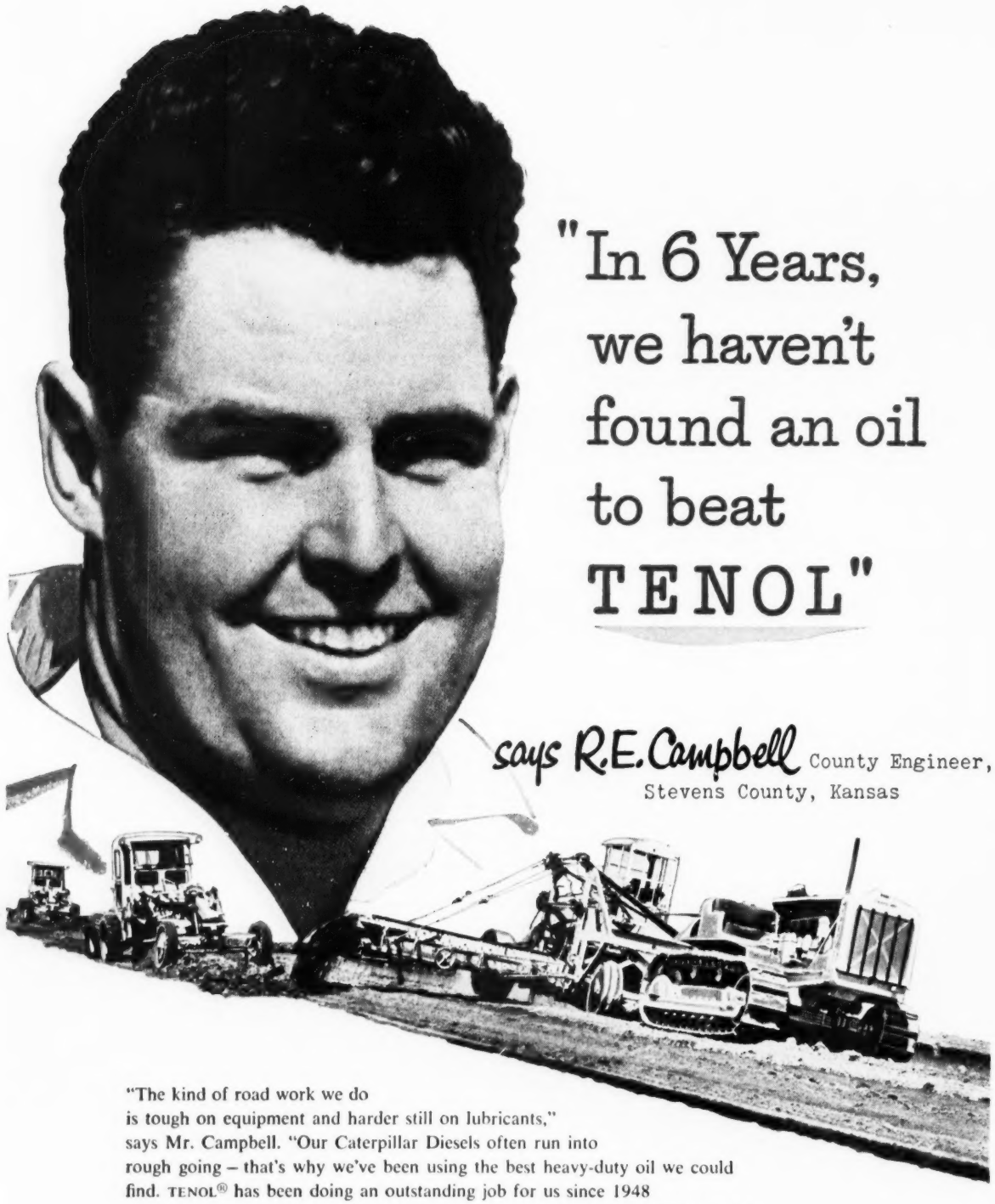
MIGHTY WRENCHES and jacking ring are necessary when breaking tools to change bits. Note that this drill rig is on crawlers. Of four others, two are on skids, one on truck, one on trailer.

WELDED HARDFACING is applied to tip of bits in shop at job. Rod is Liquid Air C90 and current is supplied by P&H 300-amp welding machine. The big bits must be handled by chain falls.



RELIEF WELL in center of ring of freeze holes is sucked by 8-in. Layne-Bowler pump. Wood box sluices carrying cuttings bailed from other holes seem to lead to it, but dump into settling pit.

BORE-HOLE INSTRUMENT is readied for lowering into well to check deviation. Homco surveying unit carries plumb bob, compass, camera, light source and timer; takes photographic record of hole.



# "In 6 Years, we haven't found an oil to beat TENOL"

says R.E. Campbell County Engineer, Stevens County, Kansas

"The kind of road work we do is tough on equipment and harder still on lubricants," says Mr. Campbell. "Our Caterpillar Diesels often run into rough going – that's why we've been using the best heavy-duty oil we could find. TENOL® has been doing an outstanding job for us since 1948 – it has helped prevent sticking valves and rings – it has done an excellent job of keeping our engines free from sludge and carbon."

By experience Mr. Campbell *knows* that Sinclair markets only top quality products. That is why Sinclair products are used 100% on his equipment. Why don't *you* discover the many advantages of Sinclair lubricants? Phone your Sinclair Representative or write Sinclair Refining Company, 600 Fifth Ave., New York 20, N. Y.

**SINCLAIR TENOL** prolongs engine life

Figuratively speaking, two heavy-duty LIMA cranes have been "pulling themselves up by their bootstraps" on the Tilaiya Dam in India. Equipped with 2-yard, bottom-dump concrete buckets, they work across the dam placing concrete in 4-ft. high layers. At the end of each cycle they move up to the top of the layer just poured . . . then start pouring the next layer.

No matter where the job or what it is, you'll find you can do it better with a versatile LIMA. Their greater, better-balanced weight assures the stability needed to use long booms at low angles . . . their ease of control insures easy, fast positioning of buckets or hooks . . . their maneuverability makes it easy to climb steep inclines or inch to the edge of long drops.

What's more, the sturdy unit construction, simple rugged design, anti-friction bearings, and many other features give plenty of stamina for the toughest jobs . . . long life and absolute minimum maintenance.

See your LIMA distributor. He'll be glad to explain how a LIMA machine can do a better job. The LIMA line includes shovels ¾ to 6 yards, cranes up to 110 tons, and draglines variable.

**LIMA**

**SHOVELS • CRANES**
**DRAGLINES • PULLSHOVELS**

BALDWIN BLH LIMA-HAMILTON
Construction Equipment Division

**BALDWIN-LIMA-HAMILTON CORPORATION**
**Construction Equipment Division**
**LIMA, OHIO, U.S.A.**

# RE-LUG WITH *Grip-Lug*

*Grip-Lug* **brings you new tractor efficiency ..longer track wear**

ALLIED BULLDOG BRAND PRODUCTS TRADE MARK

## Exclusive Design Tractor Grouser Retread

- **Increased Tractor Efficiency**

  Bulldog Tractor Grip-Lug stops slipping, sliding loss and fuel waste. Eliminate expensive delays and profit-wrecking inefficiency by rebuilding old shoes to original size with Grip-Lug. Increased gripping power—more work and larger loads at less cost.

- **Lower Replacement Costs**

  Bulldog Tractor Grip-Lugs provide greater increased traction at a fraction of the cost of new replacement parts; equipment can be "re-lugged" without dismantling—saving hours of valuable down-time and expensive labor costs.

- **Longer Wear**

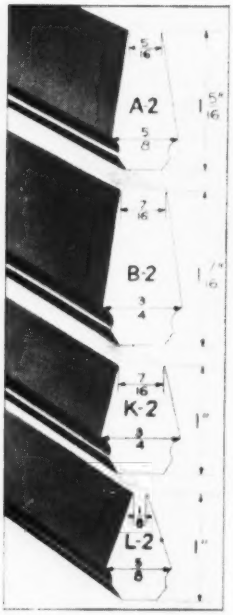
  Bulldog Tractor "Grip-Lug" is made of special work-hardening steel—becomes harder and tougher with use—usually outwears the original grouser.

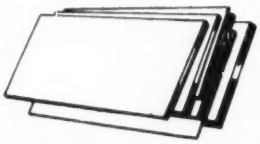
- **Economical**

  Bulldog Tractor Grip-Lug's exclusive and specially-designed shape, engineered groove and bevel, scientifically "weld-metalized," permits welding application much faster and cheaper—provides a secure and better finished job than original parts with less welding time and material. Inexpensive. A.W.S. E-6016 or E-7016 low hydrogen electrodes can be used.

- **Sizes and Shapes to Meet Your Requirements**

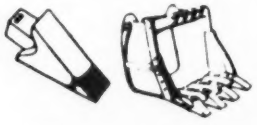
  Bulldog Tractor Grip-Lug shapes and sizes (shown here actual size) are available to fit any track-laying or crawler type equipment. Supplied in 10-foot lengths—also available in cut-to-length—ready to weld—at slight extra cutting charge.



**TUF-A-BRASE**

BULLDOG TUF-A-BRASE is a special alloy wear-resisting plate. Excellent to reline and repair bins, chutes, scoops, grizzlies, bucket floors, etc. Welds easily with low hydrogen electrode.



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**7835 BROADWAY — CLEVELAND 5, OHIO, U.S.A.**


## FREEZE TO DIG

. . . Continued from page 85

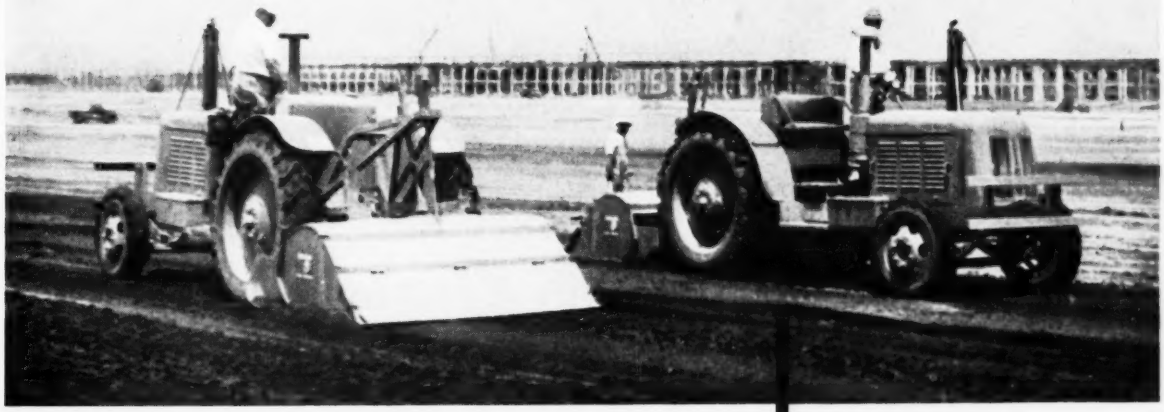
JOB-BUILT METER measures vertical water flow in hole at any depth. As impellers on vertical shaft turn, magnetic coupling and selsyn transmitter send information to selsyn repeater on surface. Instrument is sealed in hole by expanding, by water pressure, rubber sheet around unit's 6-in.-pipe body.

points will indicate rates and locations of freezing as the ice wall forms. To insure that the wall will freeze uniformly all around, the 28 freeze pipes will be fitted with valves to control the rate of brine flow. When the wall has been frozen to a thickness sufficient to withstand the subterranean hydrostatic pressures, the shaft will be sunk in the center. A subsequent article will describe this shaft-sinking operation in detail.

### Job Personnel

General contractor for this unusual shaft job is Winston Bros. Company, Minneapolis. Charlie Gail is project manager, Jim Tripp is project engineer and assistant to the project manager, Paul O'Neal is general superintendent, and Monte Richards is office manager. Subcontractor for hole drilling is International Water Supply Ltd., London, Ont. For Canadian Rock Salt Co. Ltd., Martin O'Day is mine manager and Bill Rice is mine superintendent at the Ojibway, Ont., operation.

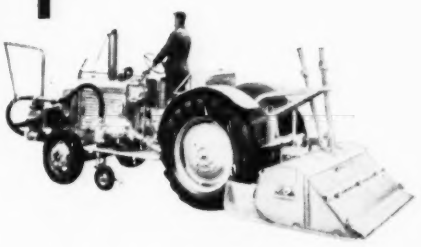
# Now You Can Pulverize Harder Soil ... Process Deeper ... Get a Higher Daily Output



with the

## NEW HEAVY-DUTY 1953 SEAMAN TRAV-L-PLANT

Two SEAMAN Self-Propelled MIXERS owned by Wright Contracting Co., at work on a portion of a large soil-cement project involving over one million square yards at the Albany (Ga.) Marine Depot.



The *NEW* Seaman Self-Propelled TRAV-L-PLANT is built to convert tough, difficult deep stabilization or compaction projects into fast moving high production jobs. You can pulverize harder clods and mix deeper than with any other mix in-plant travel plant.

Further, the Seaman TRAV-L-PLANT answers the ever-present questions:

***"What can I do if aggregates are not properly coated in one pass?"***

***"If my soil-cement mix is not up to specification in one pass?"***

With the SEAMAN — if binders are developing unfavorable characteristics due to any one of many conditions beyond the control of the roadbuilder . . . if gradation of aggregates still needs correction — *just make another pass with the SEAMAN* — or as many as you need to bring the job to perfection. You can afford it — with plenty to spare — because multiple passes with the SEAMAN are fast and very low in cost.

And with the SEAMAN, you have an all-purpose machine for *every* type of stabilization — with every binder, every size of aggregate up to 5" and every recommended native soil. There's never a *partial* mix when you process, blend and finish with a SEAMAN. And the material is firmly placed with uniform depth and density — partially precompacted, blended and ready for finish rolling.

*Send for this Bulletin completely describing the SEAMAN TRAV-L-PLANT and the Self-Propelled MIXER. Shows field scenes, operating hints and complete specifications.*

**SEAMAN MOTORS Inc.**

280 No. 25th St. • Milwaukee, Wis.

**Lead-Zinc Mining in Utah**—Bethlehem Hollow teams up with carbide-tipped bits on the 1500-ft level of the Mayflower Mine of New Park Mining Co. This jumbo-mounted drifter puts in 6-ft holes through abrasive sulphide ore bodies.

**Dam Building in Northwest** — Excavating work at the site of Chief Joseph Dam on the Columbia River called for more than 100 tons of Bethlehem Hollow. This is a recent addition to the long list of big projects where this "old reliable" of drill steels has had the responsibility for keeping drilling on schedule.

**Buffalo Underpass Job** — Rock drilling doesn't stop for chilly weather in Buffalo. Here Bethlehem Hollow bores into hard, flint-streaked rock on an excavating job that removed 70,000 cu yd of rock on a four-lane underpass contract.

# Steel that chews rock from Vermont to California

Deep-holes, short-holes. Hard, abrasive ore . . . basalt . . . dolomite. Steel bits . . . bits with carbide inserts.

Whatever the depth of hole, type of rock, or style of detachable bit, there's one hollow drill steel that does the job from coast to coast, and does it well. It's Bethlehem Hollow.

Make sure you've got this old reliable on the job!

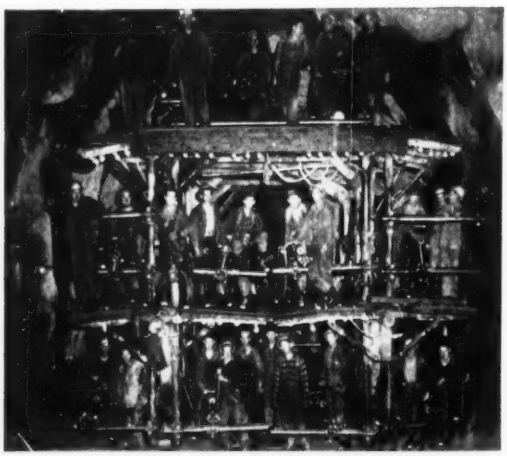
**IMMEDIATE DELIVERY**

Bethlehem Hollow Drill Steel is ready to ship from our mill depot in all popular sections and sizes. Also available from local converters. And if you need solid drill steel, quarrying steels, auger drill steel, or steel for stone-dressing tools . . . remember to specify Bethlehem. Each steel is engineered to give a lot of service.

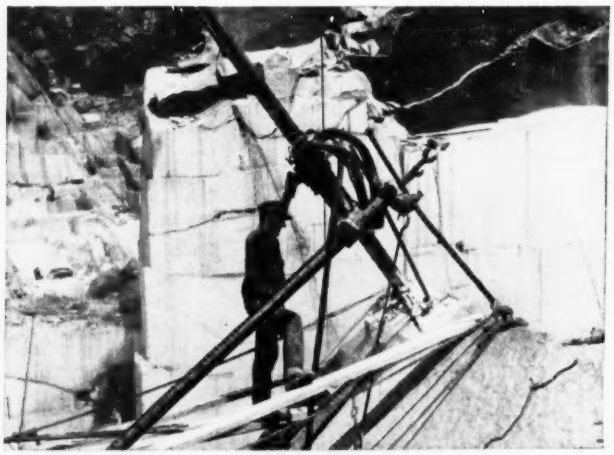
BETHLEHEM STEEL

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation



**California Tunnel Project**—Here's the three-story drill carriage and one of the crews that smashed three records for driving large-diameter tunnels. Big Creek Project No. 4 was the scene of this outstanding performance of Bethlehem Hollow.



**Quarrying Vermont Granite**—A real test of drill-steel quality is provided by "Rock of Ages," a hard, dense-grained granite. This rock drill, using Bethlehem Hollow, is mounted on a movable saddle so that a line of holes can be drilled in perfect alignment. Quarries everywhere rely on Bethlehem Hollow.

**BETHLEHEM HOLLOW DRILL STEEL**

# 19 mph speed on rubber

## GETS MORE WORK DONE

Have you ever figured how much time is lost on your job when crawler scrapers work your long or medium hauls . . . or when scrapers have to wait for slow, cumbersome pushers to position . . . or on the slow return of crawler-dozers?

Much of this wasted profit-cutting time can be eliminated by Tournatractor! This 19 mph rubber-tired unit "runs" instead of crawls . . . gets more work done on pushing, pulling *and* dozing jobs. Here's why . . .

### Travels 100 ft. to crawler's 42

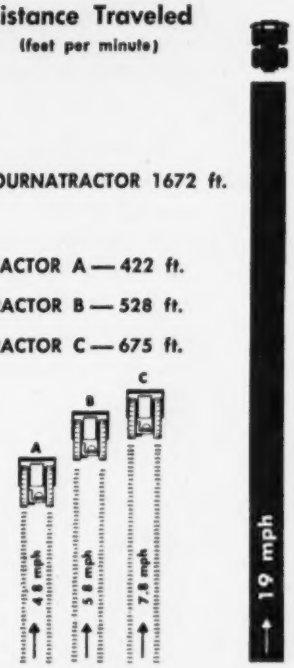
Tournatractor's top forward speed is 3 to 4 times greater than the top of most crawlers. When push-loading or dozing, Tournatractor travels 100 feet forward in second gear (3.7 mph) while 3 of the leading competitive crawlers move only 32, 40, and 42 feet. In one minute, on towing applications, Tournatractor travels 1,672 ft. in fourth gear (19 mph), while the same crawlers, in top gear, move only 422, 528, and 675 ft. And, when traveling job-to-job, of course there's no comparison. Rubber-tired Tournatractor goes anywhere — over paved highways or across country under its own power at 19 mph . . . requires no trailer, loading or unloading, no blocking, no planking.

### Cuts deadhead time, 2½-to-1

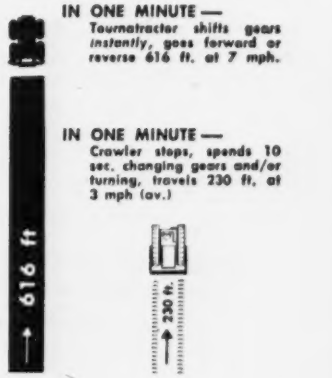
High reverse speeds are a very important time-saving advantage, too, because nearly 50% of your working cycle on many jobs is spent backing up. Tournatractor's 8 mph reverse cuts your deadhead cycle time by about 2½-to-1 . . . lets you use saved minutes *productively*. You position at the touch of an electric steering switch. You shift gears at the flick of a finger. There are no bulky levers to tug . . . no clutch to work. Total result: more work done with less fatigue, *and at lowest net cost*. See your LeTourneau-Westinghouse Distributor for all the facts.

## TOP SPEED FORWARD

**Distance Traveled**
(feet per minute)




## SPEED IN REVERSE


IN ONE MINUTE —
Tournatractor shifts gears instantly, goes forward or reverse 616 ft. at 7 mph.
IN ONE MINUTE —
Crawler stops, spends 10 sec. changing gears and/or turning, travels 230 ft. at 3 mph (av.)
616 ft
230 ft.

Tournatractor—Trademark T-352-G-b

# LeTourneau-Westinghouse Company

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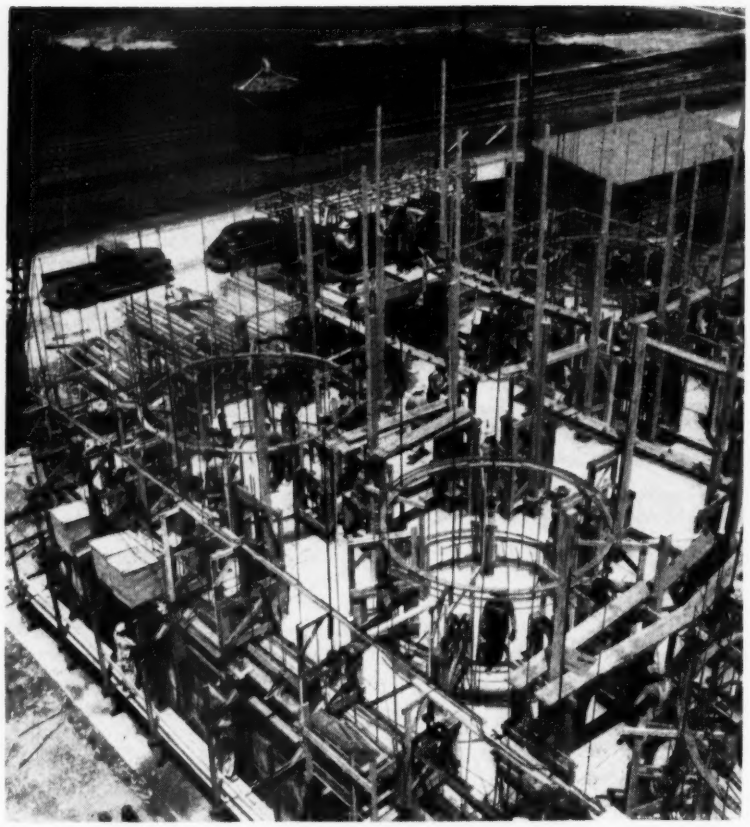


BUCKET OF CONCRETE swings over platform and hopper that loads concrete carts for day-and-night construction. Integrated extra structures required much interior formwork.

# Continuous Pour Builds C

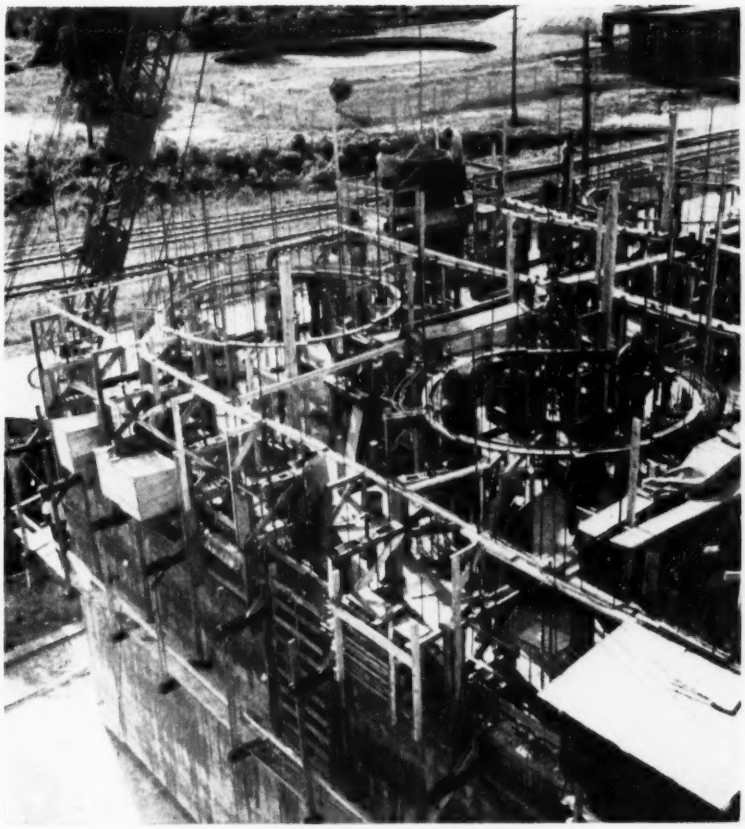
SEVEN DAYS of 'round-the-clock concreting can construct a lot of wall when the method is right and materials keep coming. The method was right and materials were kept coming by The Rust Engineering Co. of Pittsburgh in the erection of a main structure, eight interior bleaching towers 57 ft 10 in. high and one chlorination tower 81 ft 10 in. high at the Hollingsworth and Whitney Co. paper mill in Mobile, Ala.

Sliding forms and continuous pour was the method. The new bleach plant measures 107 ft 3 in. by 58 ft 8 in. on the exterior. Walls, integral exterior columns, eight interior columns, floor beams, an elevator shaft and nine circular bleaching towers—ranging from 13 ft to 15 ft 4 in. in dia—were constructed simultaneously with the slip-form method.

Approximately 2,000 cu yd of concrete were placed through sliding forms, and the structure consumed 250 tons of reinforcing steel. Arrangements had been made with a local supplier who set up a schedule of trucks and crews to deliver transit-mix concrete steadily for one week.

Operations were kept completely flexible by employing two long-boomed cranes to handle concrete and other materials. Rust Engineering has found in its long experience with sliding forms and continuous pour that a mobile crane is far superior in flexibility to one or two hoisting towers.

Wood forms were used. They were 4 ft high, made of 1-in. t & g lumber with boards set vertically. Normally in slip-form concreting the work platform is relatively unobstructed. But for the Hollingsworth and Whitney bleach plant free floor space was at a premium. Forms and jacking equipment also had to be placed for bleach tow-



GOOD SCHEDULING of materials keeps construction going. Reinforcing steel is kept handy. Scaffolding suspended on outside carries platform for finishing of wall.

# Concrete Bleach Plant

ers, inner columns, elevator shaft, and floor beams.

Transit-mix trucks dumped their concrete into a 1-yd bucket handled by one of the cranes. The bucket, in turn, dumped into a hopper on the work platform where concrete was distributed to walls and columns under construction in hand buggies. Concrete was vibrated with small electric vibrators after the initial pour and start of slide.

Close coordination of materials supply, jacking operations and placing of reinforcing steel kept the job steadily on the move. At the end of the week the contractor had built a 77-ft wall and associated structures at an average rate of 5½ in. per hr. There was no finishing of interior walls, except the main building and exterior face of the tower walls. The outside of the building wall was given a finish by workmen on scaffolding suspended from the outer jack yokes. This also had to be a continuous operation.

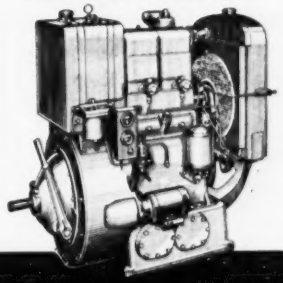
As forms were jacked steadily upward, provision had to be made for various door and window openings, pipe sleeves and other installations demanded by the building design. Good planning and faithful scheduling were of the essence here because placement of concrete could not be interrupted.

Nelson Machine Co. manually operated, screw-type jacks were used to raise the forms and work platform. Several men of the work crew kept making the rounds turning screw heads that raised the supporting yokes. Building walls were poured 8 in. thick. Bleach tower walls are 12 in. thick, to hold safely the hydrostatic pressure of the liquid contents.

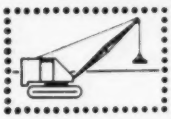
The structure was kept plumb on its way up by reference to eight

*(Continued on page 96)*


*Save Money*
ON SCORES OF CONSTRUCTION POWER JOBS...



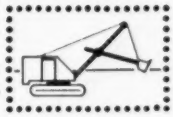
with NORDBERG Diesel Engines



ELECTRIC POWER FOR LIGHTING OR FOR CRANE MAGNETS.

FOR ORIGINAL OR REPLACEMENT POWER IN MIXERS.

FOR DRAINAGE AND OTHER PUMPING JOBS.



FOR RE-POWERING SMALLER SHOVELS.

● THESE are just four of the scores of construction powering jobs you can handle better, at lower cost, with Nordberg Diesel Power Units. Built in 1, 2 and 3-cylinder sizes, these compact, heavy-duty units provide from 10 to 45 hp, or 6 to 30 kw for around-the-clock construction service. *Get the facts today. Clip the coupon now.*

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NORDBERG
BUILDERS OF AMERICA'S LARGEST LINE OF HEAVY DUTY DIESELS

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Nordberg Mfg. Co., Milwaukee, Wisconsin

Send catalog covering Nordberg Type 4FS Diesels. I am interested in a unit for the following service: CM

Your Name_____

Company Name_____

Address_____

City_____ Zone____ State_____

4-153-C

# DOMOR Elevating Grader and Cat DW10's Extend Runway on Greenville Air Base

*• Ask your Caterpillar-Domor Dealer to show you the new 10 minute color film of the Domor Elevating Grader in action.*

**Superintendent H. A. Ross says the Domor is the answer to his prayers for fast dirtmoving and is the cheapest method he has ever used.**

Burdine Construction Company is using its Domor Elevating Grader for runway extension and drainage on the Greenville, Mississippi, Air Base. Loading into four Caterpillar DW10's with wagons on a two mile round trip haul, the Domor handles an average of 2000 cubic yards of sandy loam daily.

*See Your Caterpillar-Domor Dealer*

DOMOR
ELEVATING GRADERS
ROAD WIDENERS
SNOW BLOWERS
ULRICH PRODUCTS CORPORATION
ROANOKE, ILLINOIS

## Ulrich Products CORPORATION

ROANOKE, ILLINOIS

# NEW large capacity *fresh air* PORTABLE HEATER

## DELIVERS 420,000 B.T.U. per hr.

Model ID is an entirely new Silent Glow Portable Heater, designed to produce an abundance of heated fresh air where you want, when you want it. It starts at the flick of a switch, and is fully automatic with thermostatic control and with special electrical equipment designed for outdoor operation. Hence it can be used anywhere at any time that quick heat is needed.

Model 2, shown above, delivers 420,000 B.T.U.'s per hour; Model 1, slightly smaller, delivers 310,000 B.T.U.'s per hour. Both heaters are indirect fired type and have a stainless steel combustion chamber designed for the highest possible efficiency for indirect heating. Light in weight (only 350 lbs.) for easy portability. . . . Send in the coupon below for the complete story.

*Investigate* **SILENT GLOW PORTABLE HEATERS**

*Those Who Know Choose* SILENT GLOW OIL BURNERS

**THE SILENT GLOW OIL BURNER CORP.**
866 WINDSOR STREET • HARTFORD 1, CONN.

Please send me information on the ID Heater.

NAME_____

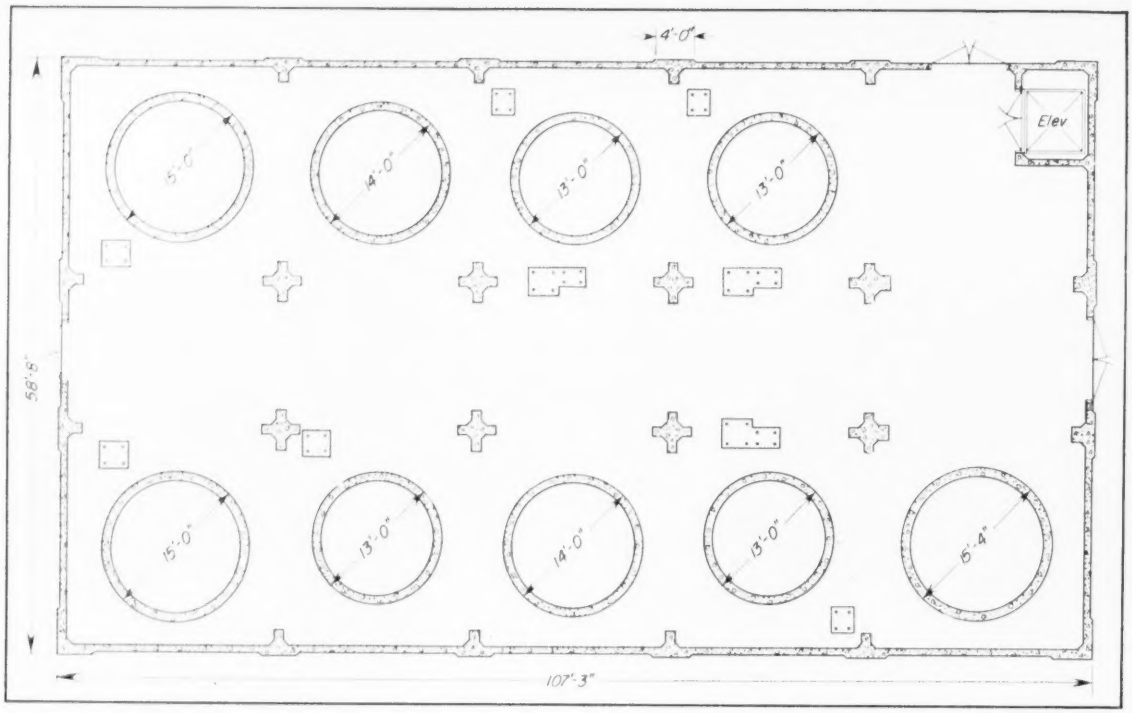
COMPANY_____

STREET AND NUMBER_____

CITY_____ STATE_____

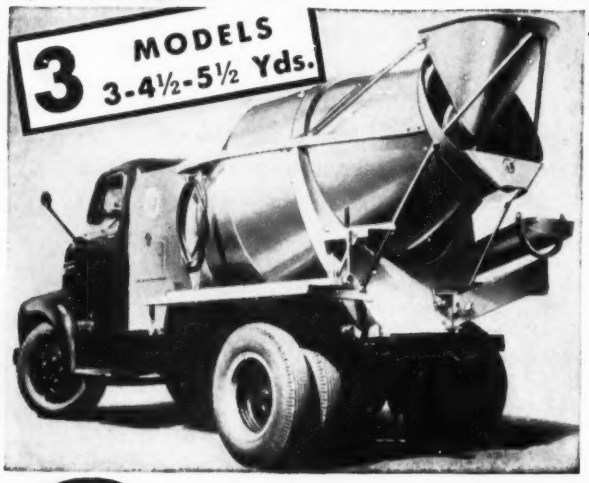
JSH52

CONTINUOUS POUR . . . Continued from page 93




NOT ONLY WALLS, but also eight interior columns, an elevator shaft and nine circular towers were poured simultaneously, all forms jacked at same time. Structure walls consumed 2,000 cu yd of concrete, 250 tons of reinforcing steel—all placed in seven days.
*(Continued on page 99)*


# PAYS OFF WITH BIGGER PAYLOADS




**RUGGED! loaded with MONEY-MAKING FEATURES yet LOW PRICED & LIGHT WEIGHT**

- Easier to handle on the road and on the job.
- Thoro-Mix action. Mixes and discharges all slumps.
- Simplest of all. No maintenance or service problems.
- Now available as 3—4½—5½ yd. mixer.

**Construction Machinery Co's., Waterloo, Iowa**

MC **TRANSCRETE** TRUCK MIXERS

# Move More with a MICHIGAN

## "MICHIGAN air control and clutches make operation smooth and easy. This is our second MICHIGAN—it's definitely MICHIGAN for us!"— *C. KOOISTRA, Owner*

**HERE ARE THE JOB FACTS**

| | |
|---|---|
| JOB | **Cellar excavation, Camp Gaw, N. J.** |
| MACHINE | **MICHIGAN C-16 . . . hoe, 30" pads** |
| MATERIAL | **Hard pan, stump removal** |
| YARDAGE | **400 per day** |
| FUEL | **10-12 gallons, 8 hours** |
| OWNER | **C. Kooistra, Midland Park, N. J.** |
| COMMENT | **"Swing, travel, hoist, steer all at once—easy! That air control and MICHIGAN clutch are tops." Cornelius Kooista (son), operator** |

## *TO MOVE MORE YARDAGE FASTER, AT LOWER COST*- Make it a MICHIGAN

**These 5 cost-cutting quality advantages explain why over 60% of MICHIGANS sold are repeat orders**

**AIR CONTROL** — just easy, effortless operation, because air rams actuate the clutches. An operator stays at top efficiency all day without tiring, because air power instead of muscle power does the work. MICHIGANS have been air controlled for over 20 years.

**ONE-PIECE CIRCLE GEAR AND CARBODY**—Compare MICHIGAN construction to others: the *circle gear and carbody in a single heavy alloy-steel casting.* No wonder this machine lasts longer, requires a minimum of service.

**HEAVY TURNTABLE CASTING**—Notice this heavy-duty construction usually found only in the biggest machines: turntable deck, side frames and hook-roller mounting brackets in a single casting—*One main cause of excessive wear and replacement completely eliminated!*

**FAMOUS MS CLUTCH**—Another MICHIGAN exclusive: a single-disc double-face clutch with six interchangeable segments on each face, so you can replace segments in a matter of minutes—*in the field.*

**QUICK MAINTENANCE AND SERVICE**—Big time savings here—grease the whole job in a few minutes, save hours. Compare MICHIGAN air control simplicity to the complicated mass of toggles, rods, joints, etc., on mechanical control. Eliminates tedious greasing.

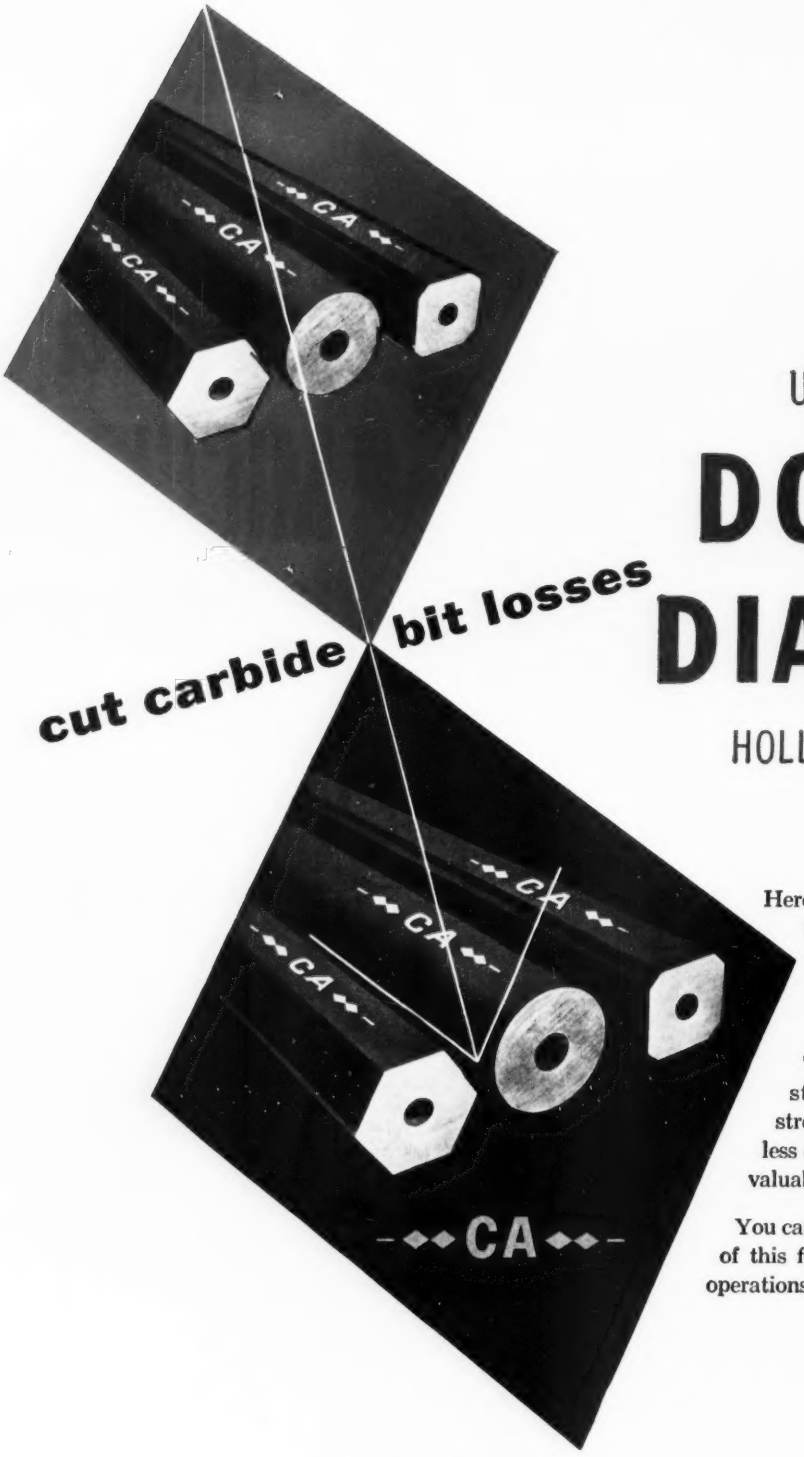
Check the MICHIGAN Line—point by point against all others. Convince yourself—see these powerful machines in action—fast, easy, smooth. You'll see right away that *MICHIGAN Means More for Your Money.*

See your MICHIGAN dealer—
*and write for literature.*

**CLARK EQUIPMENT** Construction Machinery Division

**CLARK EQUIPMENT COMPANY**

495 Second Street, Benton Harbor, Michigan, U.S.A.




cut carbide bit losses

USE CRUCIBLE

# DOUBLE DIAMOND

HOLLOW DRILL RODS

Here's the finest, toughest hollow drill rod made. Crucible DOUBLE DIAMOND is made to tool steel specifications by the nation's leading producer of tool steels.

That's why it has greater fatigue strength . . . and greater fatigue strength means lower drilling costs — less down time and fewer losses of those valuable tungsten, carbide bits.

You can't afford to overlook the advantages of this fine alloy drill rod in your drilling operations. Write for full details.

**CRUCIBLE** first name in special purpose steels

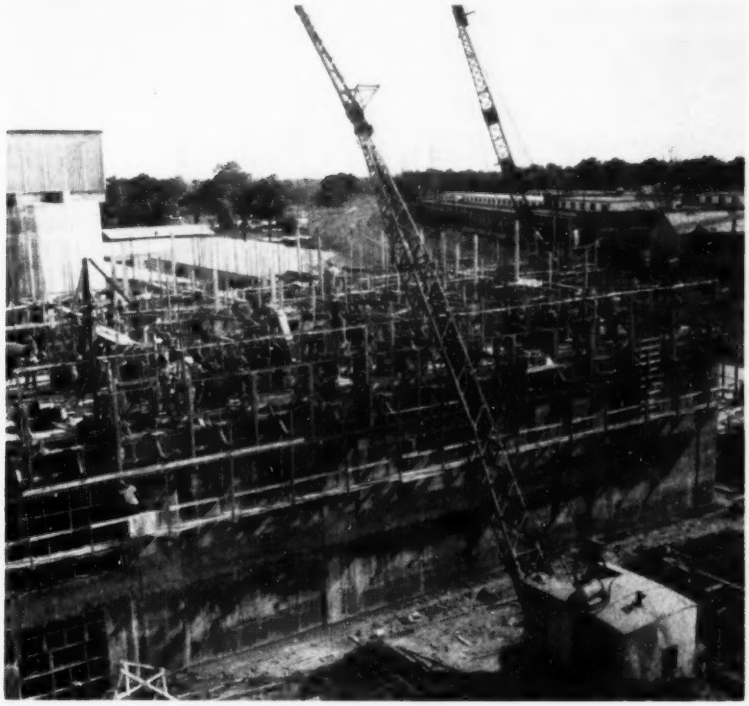
53 years of Fine steelmaking

## HOLLOW DRILL RODS

CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES, OLIVER BUILDING, PITTSBURGH, PA.

REX HIGH SPEED • TOOL • REZISTAL STAINLESS • ALLOY • MACHINERY • SPECIAL PURPOSE STEELS

**CONTINUOUS POUR** . . . Continued from page 96



TWO CRANES with extra-long booms and jibs lend complete flexibility to materials handling, can roam all around the job if necessary and place materials directly where needed. Although platform looks cluttered, everything is in order and work goes smoothly.

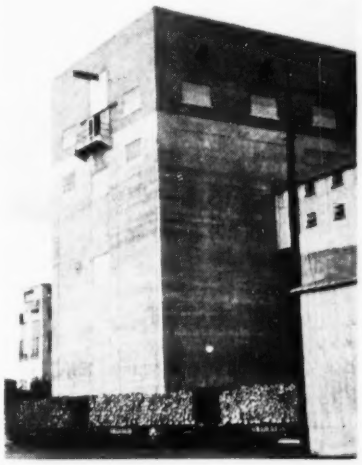
20-lb plumb bobs dropped from check points. Misalignment tendencies could be halted by compensating on the appropriate form jacks.

The 77-ft level of the building is the operating floor level. Here continuous pouring was stopped except for the chlorination tower which was continued to its full height of 81 ft 10 in. and another 25 ft added to the structure (not the bleach towers) by conventional reinforced concrete framing for flat roof arch and masonry wall.

The Rust Engineering Co., with some 30 yr experience in using the sliding form method of concreting various structures, has some helpful hints on the method. First, there must be detailed schedules for the exact placement of windows and other wall inserts. All materials must be on hand or arrive on the job exactly as they are needed. Where the contractor depends upon a local supplier of concrete, he must be sure that his man is reliable to the letter—and the mix must be just a little stronger than usual for this kind of pouring.

Although a slip-form construction project gets a lot of wall placed in a short time, it normally requires three construction crews; at least two shifts must be worked each 24 hr. Operations are mighty rugged for supervisors while concreting is in progress. Most of the time they can catch only a few hours sleep each day.

Project manager for Rust on the bleach plant was F. L. Wilhelm. H. V. Arnold was field superintendent.



COMPLETED BUILDING is 102 ft high. Upper 25 ft were constructed by conventional construction—contain plant operating floor.


ALLIGATOR
**V-BELT DRIVES**
***. . . you can make up all lengths of V-Belts quickly***

★ **Units contain V-Belting, Fasteners and Tools** — everything you need in one package for all emergencies when correct endless V-belt is not available.

★ **Avoid costly delays,** shut-downs and pickups.

★ **Eliminates costly dismantling** of machinery when re-belting.

★ **Completely modern make-up units** that give you peace of mind as well as stock on hand.

★ **Less Stretch and Follow-Up Maintenance.** Just One Strong Joint.

★ **Alligator V-Belt Drive Units,** available in sizes A, B, C and D. B size furnished in display box.

★ **Order from your distributor. Ask for Bulletin V-215.**

**FLEXIBLE STEEL LACING CO.**
**4699 Lexington St. Chicago 44, Ill.**

# RUGGED "Individuals

## THAT'S THE BUCYRUS ERIE LINE OF 3/8 - TO 4 - YARD EXCAVATORS . . .

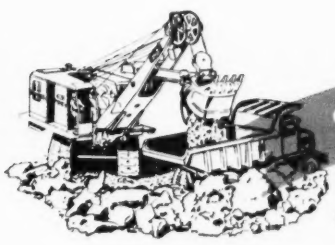
**Each model** is *individually designed* all the way through from crawler treads to boom point sheaves for a definite size payload. Maximum stability and maximum strength are obtained without that extra weight which slows down the operating cycle or adds to power consumption.

**That's because** each part is built of tough special steels, developed especially for the individual duties involved. No parts are too small — strength is built in where you need it. No parts are too big — bulky deadweight is eliminated. This is Bucyrus-Erie *individual design.*

**Because of** *individual design* you can always be sure that your Bucyrus-Erie excavator will carry out the work it is rated for with speed, safety, and at low maintenance cost. Ask your nearby Bucyrus-Erie distributor to give you complete details. 16E53C

# BUCYRUS-ERIE COMPANY

SOUTH MILWAUKEE, WISCONSIN



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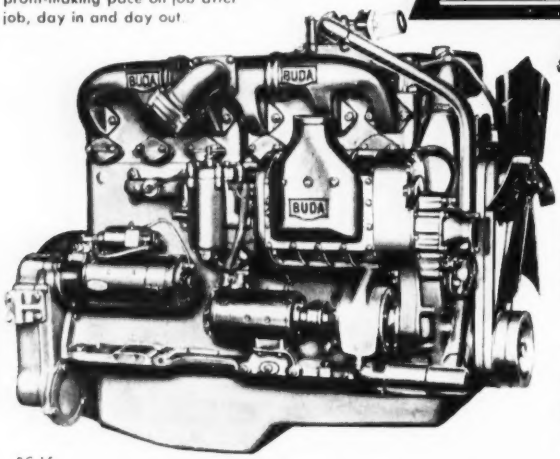
# You can See the

# EXTRA POWER

## of BUDA Diesels in More Pay Yards per Hour

Spencer Construction Co., Carrollton, Texas, using 3 TS-300 LaPlant-Choate Motor Scrapers powered by Buda Supercharged 844 Diesel engines for steady, slugging performance that sets a profit-making pace on job after job, day in and day out.

**BIGGER PISTON DISPLACEMENT PAYS OFF IN...**




BC-15

### *Larger Loads...Faster Trips!*

Operators all over the country are capitalizing on the extra power and greater lugging ability of Buda dyna-swirl Diesels. They can *see* the advantages that Buda Diesels' 12 to 18% more horsepower . . . 10 to 17% more torque give them in more pay yards every trip . . . every hour . . . every day.

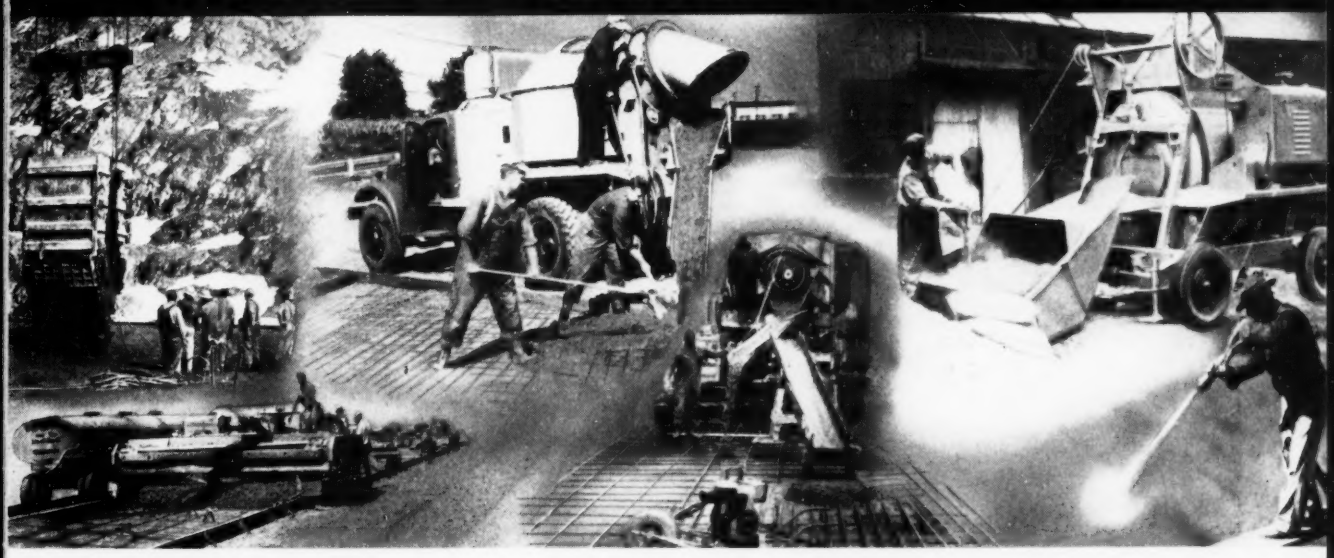
These BIG Buda Diesels are your kind of engine—simple in design . . . easy on fuel and lube oil . . . require minimum maintenance and deliver 8000 or more hours of high performance operation between overhauls.

Your nearby Buda Distributor can prove Buda dyna-swirl Diesel advantages to you. Ask him today. Write for Bulletins and specifications today. The Buda Company, Harvey, Illinois

**BUDA** *a Power-Full and Dependable Name in Engines...*

Manufacturers of Diesel and Gasoline Engines, Maintenance of Way Products, Lifting Jacks, Earth Drills and Material Handling Equipment

# CONCRETE MIXING AND PLACING



## 2. Single-Material and Multiple Batchers

By THEODORE B. APPEL, JR., Chief Engineer, The C. S. Johnson Co., Subsidiary Koehring Co.

BATCHERS essentially are the same whether they are used in roadbuilders' plants, ready-mix plants or mass concrete plants. They differ in adaptations provided to meet special requirements. The various modifications will be explained in forthcoming discussions on specialized plants.

For proper mixing of concrete, all materials must be charged into the mixer simultaneously, or nearly so. This is true regardless of size or type of mixer. There are certain operational benefits to be achieved in sequence charging which will be discussed later along with batcher modifications, but this does not change the general statement on mixer charging.

If all the materials are to be charged into the mixer at the same time, it is necessary to measure each material in separate hoppers or to measure them all in one common hopper so they can all be discharged together. In the first case each material has its own hopper. These batchers are known as single-material batchers. In the second case there is one common hopper. This type of batcher is known as a cumulative batcher.

• **Volumetric Batchers** were all single-material batchers because it was impractical to try to measure materials by volume in a common hopper.

Volumetric batching reached its greatest efficiency and accuracy with the introduction of the batcher with an adjustable cover cone and measuring stick. The batcher was a cylindrical metal hopper with a conical bottom and a conical cover which was adjustable as to position. The bottom of the hopper was equipped with a discharge gate. The cover, which had a small opening in the top, could be raised and lowered to increase or decrease the quantity of sand or stone which it would hold. A measuring stick, calibrated in cubic feet, was provided to allow setting of the cover at the proper position for the cubic content desired.

Volumetric batching was never satisfactory even in the early days of proportioning of concrete materials. It was inevitable that volumetric batchers would be displaced by weigh batchers because of the speed and accuracy obtainable. Sand swells or "bulks" as its moisture content increases, necessitating adjustments in the volume of the sand batcher for these changes in dampness. Means were provided to facilitate these adjustments, but the operation was never entirely satisfactory.

During the transition from volumetric to gravimetric batching, or weighing, many batchers were made which were merely volumetric batchers fitted with a scale lever system and which could be used either as volume batchers or weigh batchers.

• **Inundation batchers,** used extensively on large jobs in the 20's deserve comment. These batchers were developed to eliminate one of the greatest difficulties encountered in the use of volumetric batchers. Sand with a moisture content of about 5% by weight occupies 25% more space than this same sand when dry. The variation in volume

*(Continued on page 106)*

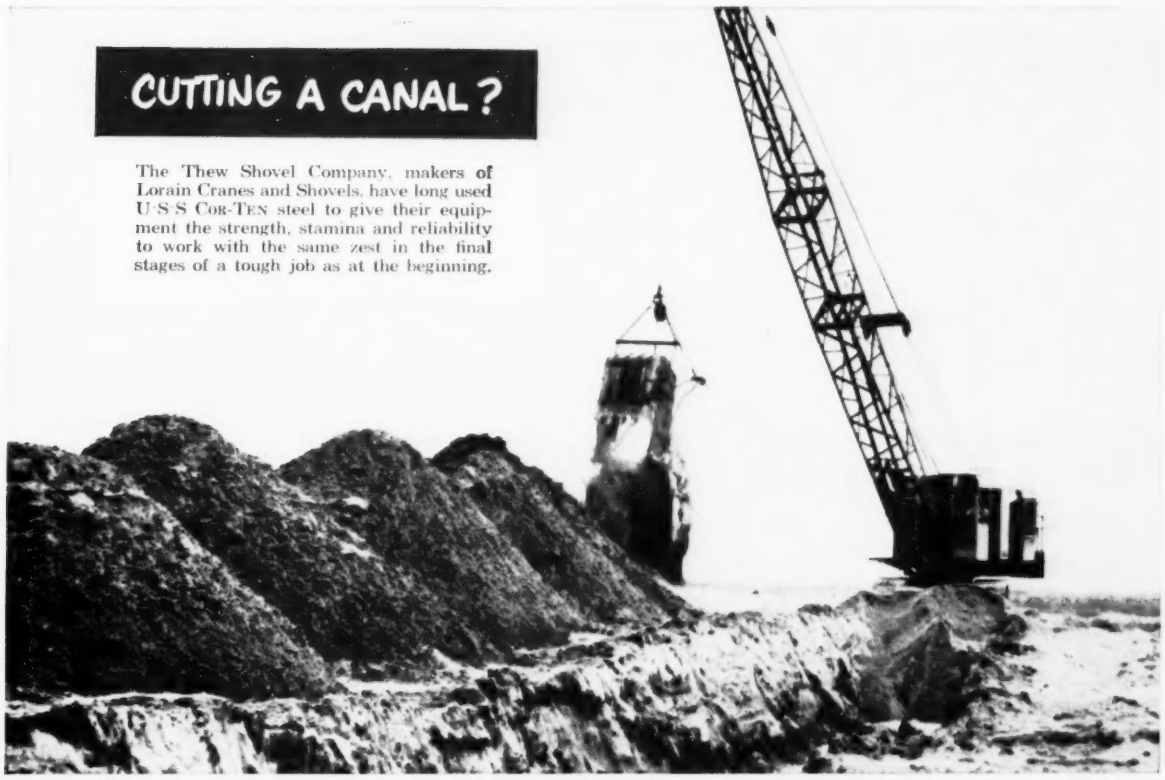
POURING A PAVEMENT?
In concrete mixers, abrasive action in the mixing drum is so severe that the Jaeger Machine Co., Columbus, Ohio, make this vital part of U·S·S MAN-TEN steel. Although MAN-TEN steel is used here mainly for abrasion resistance, its greater strength and toughness also increase service life and minimize upkeep.

# You'll do it *better, faster, at lower cost*

LEVELING A LANDING STRIP?
U·S·S MAN-TEN steel was selected for the clam and moldboard of this bullclam to reduce weight and give greater abrasion resistance. Also used for the radiator guard to save weight without sacrificing strength. "The use of MAN-TEN in all three parts enables the unit to carry heavier payloads without increasing the over-all weight on the tractor," says the Drott Mfg. Co., Milwaukee, Wisconsin.

## CUTTING A CANAL?

The Thew Shovel Company, makers of Lorain Cranes and Shovels, have long used U·S·S Cor-Ten steel to give their equipment the strength, stamina and reliability to work with the same zest in the final stages of a tough job as at the beginning.



# with U·S·S High Strength Steels

● With these three steels—U·S·S Man-Ten, U·S·S Cor-Ten and U·S·S Tri-Ten—you can obtain unusual resistance to wear, corrosion, impact and abrasion. They have definitely proved that they are the "steels that do more"—less expensively.

All U·S·S High Strength Steels have a yield point 50% greater than that of ordinary steel. This means that, when they are used in the same thickness as regular carbon steel, they materially increase strength, without adding any extra weight. Of if weight reduction is a factor, U·S·S High Strength Steels can be used in lighter sections than carbon steel without sacrificing the present strength of your equipment.

To an operator of earth-moving equipment, what do these qualities mean? Just this:

You can do the job *faster* because your equipment will stand the gaff of high speed operation and there is less time lost for maintenance . . . You can do the job *better* because your equipment is more mobile when unhampered by excess weight . . . And you can do the job at *lower cost* because maintenance and replacement costs are minimized.

Contact our nearest office and let us show you how you can apply U·S·S High Strength Steels to make your equipment last longer and do more work. For 20 years our engineers have cooperated with manufacturers of the best construction equipment in applying these steels to increase stamina and efficiency.

1933 USS HIGH STRENGTH STEELS 1953 — UNITED STATES STEEL — TWENTY YEARS OF PERFORMANCE

UNITED STATES STEEL CORPORATION, PITTSBURGH • AMERICAN STEEL & WIRE DIVISION, CLEVELAND
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UNITED STATES STEEL EXPORT COMPANY, NEW YORK

## U·S·S HIGH STRENGTH STEELS

3-2020

UNITED STATES STEEL

**CONCRETE . . .** Continued from page 103

between dry and moist sand would vary from 15% to 40%. The inundation system used a volumetric sand batcher which was first partly filled with water, after which sand was sifted in until the hopper was full.

Since sand that is completely saturated will occupy the same space as dry sand, the inundation batcher measured sand for concrete batches with considerable accuracy. Water slightly in excess of that required to saturate the sand was charged into the sand inundator, the excess being wasted. The additional water required for the mix was batched up in a separate volumetric water batcher.

• **Single-material weigh batchers** for aggregate are simple weighing devices. They are made up of a supporting frame from which is suspended a fill gate and a scale lever system which, in turn, supports the weigh hopper equipped with a discharge gate. The supporting frame is bolted directly to the bottom of a storage bin.

The fill valve controls the flow of material from the storage bin. Fill valves may be of the slide type, the radial type or the double-clam type. The slide type, while difficult to operate, takes up a minimum of head room. Some of the radial valves are equipped with pivoted weights mounted on a common shaft to make the valve jam-proof. These weights, taking the place of the front plate of the gate, yield by rotating on the shaft when a stone is caught between the closing lip of the valve and the weights. Others have a wide opening between the front plate and the valve bottom plate to accomplish the same thing. In this case the bottom plate is made extra long so that it extends beyond the natural repose of the material when the valve is closed, thus preventing material flow.

Fill valve size is important. The valve must be large enough to allow rapid batching. It must also be large enough so there will be no hang-up of the larger aggregates due to wedging or of the sand due to arching. The least dimension should be not less than 4 times the nominal size of the aggregate. Thus for a 6-in. cobble the fill valve should be at least 24x24 in. Valves for smaller aggregates and sand should have a cross-sectional area of from 1.5 to 3 sq ft. Relative narrow valve openings will be satisfactory if the valve is quite long.

Weigh hoppers generally are made of sheet steel, either circular or rectangular in section, with a bottom that slopes to the discharge gate. The discharge gate may be of the guillotine type, radial type, clam type, or a simple hinged flat plate which drops away when the latch is released. All have their merits and places where they best meet with the requirements. If the discharge rate is to be controlled, the batcher should be equipped with a clam gate.

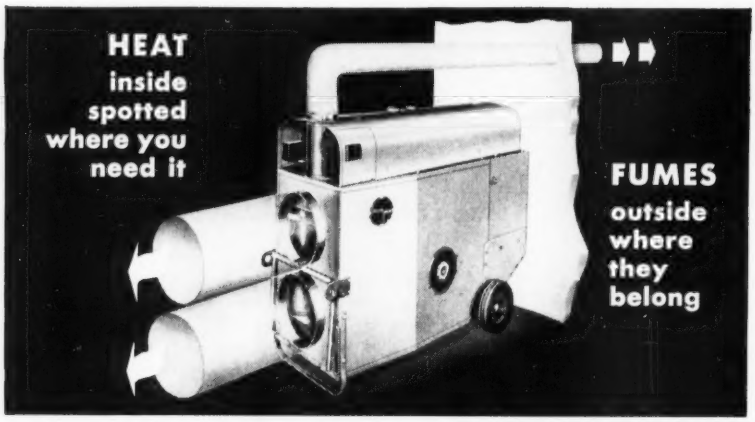
The rules for valve size given above also apply to the discharge gate. A large gate means a rapidly discharging batcher. The clam gate is to be preferred for batchers, except in certain circumstances, because a partly open clam gate does not chute the material to one side or the other.

• **Single-material batchers** for cement require an altogether different type of valve. It must be cement tight. These are generally of the plug type with the plug rotating on a shaft to open and close the valve. A slide-type emergency valve should be installed above the cement plug valve so the flow

*(Continued on page 108)*


SAFE **HERMAN NELSON**

**PORTABLE AIR HEATERS**




Portable heat can make money for you this winter—keep men on the job and materials at safe working temperatures. And Herman Nelson Heaters, with flexible ducts, put all the heat exactly where you want it with minimum waste. Heat can be "piped" under tarps, into bins and cargo spaces, direct to working areas.

Herman Nelson portable heat is absolutely safe. The heated air is completely free of combustion gases—no carbon monoxide, no smoke, no sparks. All products of combustion are kept separate and vented off as in a modern home furnace. You get all the heat you want, where you want it, with none of the dangers of salamander-type units. Act now. Your investment will be repaid in just one winter, this winter!

Remember, Herman Nelson has the only complete line of completely safe Portable Air Heaters.

AAF **HERMAN NELSON**
PORTABLE AIR HEATERS
Another Product of American Air Filter Company, Inc.
Moline, Illinois

Get all the FACTS about ALL Portable Heaters

American Air Filter Company, Inc.
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Please rush my free copy of booklet "Guide to the Selection and Use of Portable Space Heaters."

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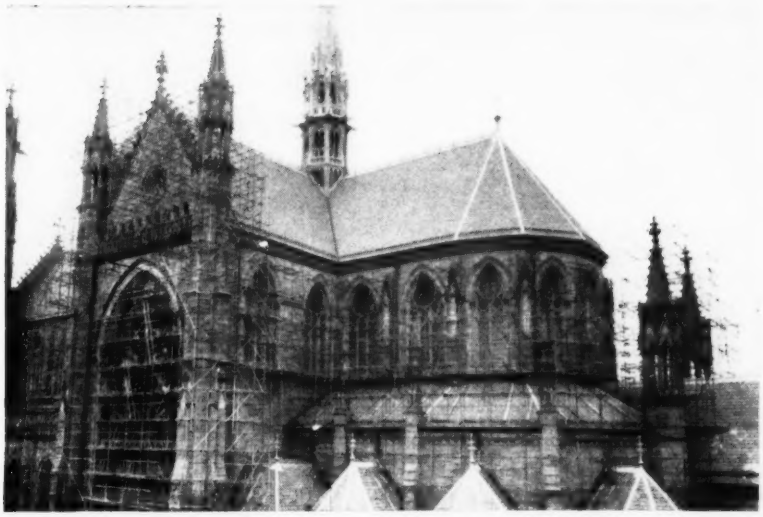


**NETWORK OF STEEL** scaffolding surrounds Cathedral of the Sacred Heart, Newark, N.J., providing safe footing for workmen who are repointing the entire stone exterior. More than 67 miles of PS Co. Scaffold was erected. Contractor is George A. Fuller Company.

# 353,760 Feet of Scaffold Helps Complete Cathedral

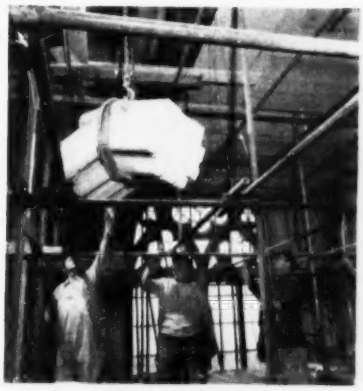
ONE OF THE LARGEST and most complicated scaffolding installations ever erected in the East employs 353,760 ft. of TubeLox® Scaffolding and 1,200 "Trouble Saver®" Sectional Steel Scaffolding frames to support stonemasons and materials involved in completing the unfinished Cathedral of the Sacred Heart, Newark, N.J.

The "shell" of the Cathedral was constructed 50 years ago, then left unfinished. Stonework had deteriorated during the interval. Chesebro-Whitman Company, Inc., supplied and erected the PS Co. Scaffolding for all inside installations and for enclosing the entire exterior, including the towering 200 ft spires. A 100 ft "Gold Medal®" Steel Hoist Tower was erected inside the Cathedral for raising materials to the walls and vaulted nave.

Inside the 277x140 ft Cathedral, Prof. Gonippo Raggi & Sons, Orange, N.J., employed 90 ft "Trouble Saver" Rolling Scaffolds to reach high window areas for specialized stained glass work. When these scaffolds were removed, sturdy TubeLox Scaffolding was installed to support the 86 ft high stone arches, located over the nave, crossing and transepts. These three areas were coverd with scaffold laid out to support loads of 1000 lbs per lineal foot. Indiana limestone was used throughout for walls, columns and arches. The main scaffold was used for centering of arches and as a storage deck for the stonework, which weighed 162 lbs per cu ft.

All PS Co. Scaffolding provided separate level platforms, which placed materials and men—directed by construction superintendent James Taylor and stone setting contractor Robert L. MacLean—at the levels required by each job. Only PS has the *right* scaffolding for every job, big or small. That's why, for the best equipment for any job, you should do as thousands of contractors and sub-contractors do—*when it comes to scaffolding, come to PS.*

**1½-TON KEYSTONE** of Indiana limestone is readied for lifting on the "Gold Medal" Hoist Tower. It will be raised 95 ft and installed in a nave arch.



**86 FT ABOVE THE FLOOR,** stonemasons stand on TubeLox Scaffolding as they guide keystone being lifted last few feet prior to being set. Scaffolds were also built to the same height in nave and transepts.

**SAFE FOOTING** for these workmen—viewed through a 36 ft clere arch—is provided by "Trouble Saver" Sectional Steel Scaffolding. They are covering a 34 ft aisle arch with Gustavino tile.

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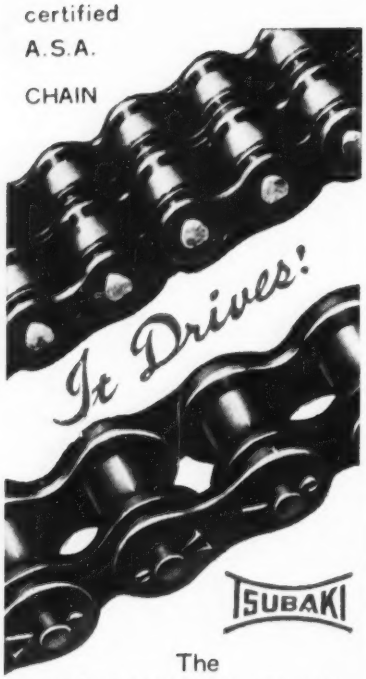


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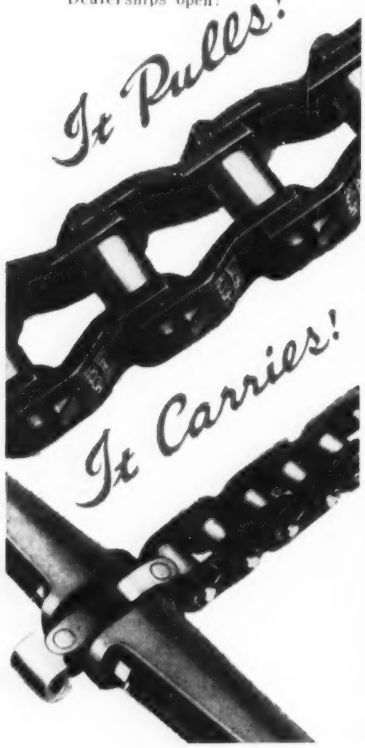


**CONCRETE . . .**

**Continued from page 106**

of cement from the storage bin can be cut off to permit removal of hard lumps of cement or foreign objects, such as sticks or pieces of burlap, which will not pass through the restricted opening of a cement valve.

Cement weigh hoppers, sometimes made of galvanized steel, differ primarily from aggregate hoppers in that they must have a tight cover and a cement-tight bottom gate. A canvas sleeve usually is provided to connect the fill valve to the hopper top, thus preventing loss of cement when charging the hopper. These sleeves also materially reduce dusting. Cement hoppers must have a vent to allow escape of air when charging and the return of the air when discharging; otherwise, the hopper likely will become air-bound.

Discharge gates are of various designs. Some are the hinged flat plate which seals against a rubber seal; others are a metal cone also sealing against a rubber seal on the bottom of the hopper. One manufacturer makes a simple but effective gate by attaching a flexible rubber tube to the hopper bottom. Below the hoppers are two movable horizontal bars or rollers. The bars squeeze the tube between them to cut off the flow of cement.

Discussion of the scales has been left to a subsequent section since their construction and operation can be discussed best along with the scales for cumulative batchers.

• **Single-material batcher operation** is simple because by far the greater number of single-material batchers in use today are manually operated. A good operator will make fewer mistakes and will weigh at a much higher speed than one less skilled. He is well worth the additional wages that he can command.

If the batcher is a weighbeam type, the operator sets the poise weights at the weight of material required and moves the fill valve to wide open until near final weight is reached, as indicated by movement of the balance indicator. He will then close the fill valve part way to restrict the flow and finally, when the balance indicator pointer shows the scale to be almost in balance, he closes the valve. Filling of the batcher at a reduced rate for the last several hundred pounds prevents overweights.

When the mixer or truck is ready

*(Continued on page 111)*

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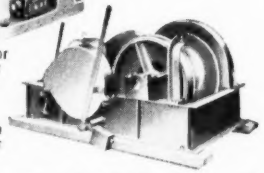

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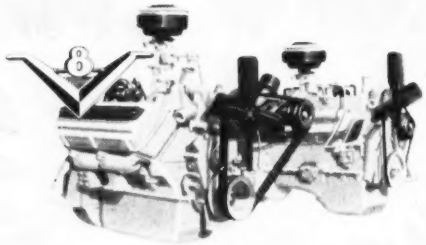

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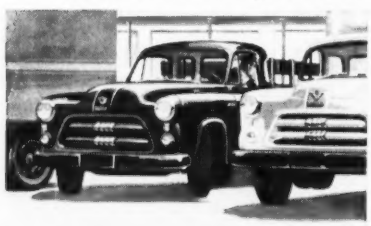

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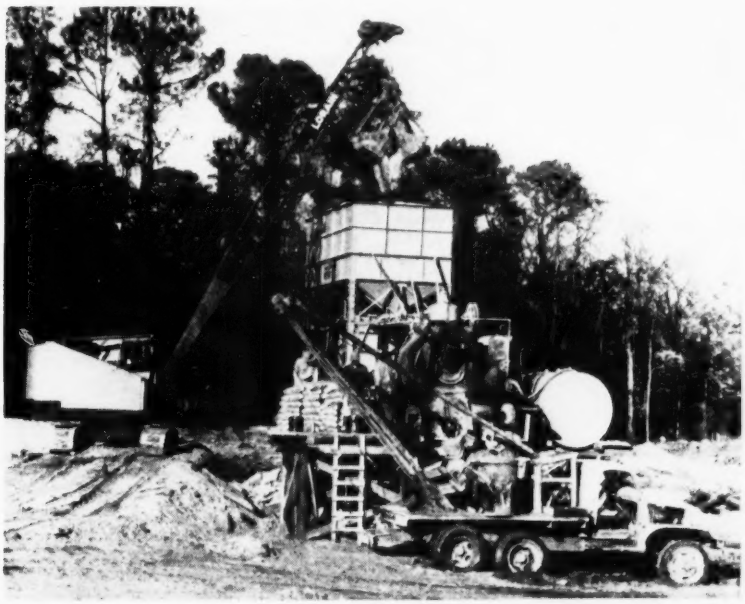

MULTIPLE BATCH PLANT on job site adjacent to mixer dumps directly into mixer skip. Buckets on truck receive concrete, and Lorain crawler with clamshell fills aggregate bins.

to receive the batch, the operator opens the discharge gate, completing the cycle of operation. If the batcher is equipped with a full reading dial, the operator watches the dial pointer when he opens the fill valve and likewise reduces the feed as final weight is approached.

• **Manual semi-automatic single-material batchers** have a fill valve which, after it is opened by the operator, will close automatically when near final weight is reached. The operator must then manually "crack" the valve to bring the batcher up to final weight. This generally is accomplished by a spring attached to the fill valve, a latch with an electric solenoid release on the fill valve handle, and an electric switch in the beam box, actuated by a beam in the beam box.

The operator opens the valve against spring action. It is held open by the latch on the operating handle. As material flows into the weigh hopper, the beam mentioned above gradually rises. Just before it reaches its balanced position it actuates the switch. The switch is wired in series with the solenoid. When the solenoid is energized, it releases the latch and the spring closes the fill valve. This arrangement allows the operator to start the weighing operation and then to turn his attention to another batcher. He must return to finish the weighing, thus leaving in his hands full responsibility for correctness of weight.

• **Air-operated valves and gates** sometimes are provided to reduce operator fatigue and permit remote operation of the batcher. For example, when the operator is located on a floor below the batcher, extension of manual levers often makes an arrangement which is not as responsive as it should be or, unless counterweighted, requires too great a force to operate. Air cylinders for the operation of valves and gates may be controlled by manually operated air valves or by solenoid air valves and push buttons.

Pneumatic valves have the advantage that no electric circuits are involved. It is inadvisable to use them if the operator's station is quite remote from the air cylinder because of the reservoir effect due to long connecting pipes and hoses. This reservoir effect makes for sluggish valve or gate action. Furthermore, if interlocks are to be provided—such as an interlock to prevent opening of the fill valve when the discharge gate is open, or vice versa—it becomes necessary to use electric circuits. Pneumatic interlocks would be entirely too costly and without any real advantages.

• **Air - operated semi - automatic single-material batchers** are provided readily if the air cylinder can be controlled by a solenoid air valve. The accompanying sketch shows schematically the simple circuit involved. The limit switch LS

*(Continued on page 112)*

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Fig. I Cross hair arrangement for our standard levels.

Fig. II Stadia hair arrangement for our standard transits.

Fig. III Special stadia hair arrangement, furnished upon request.

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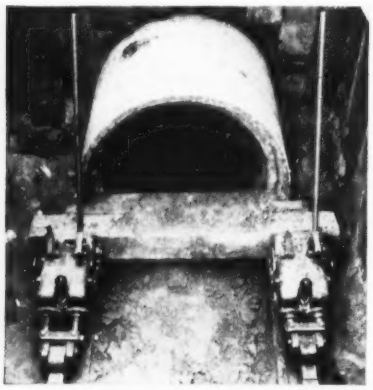

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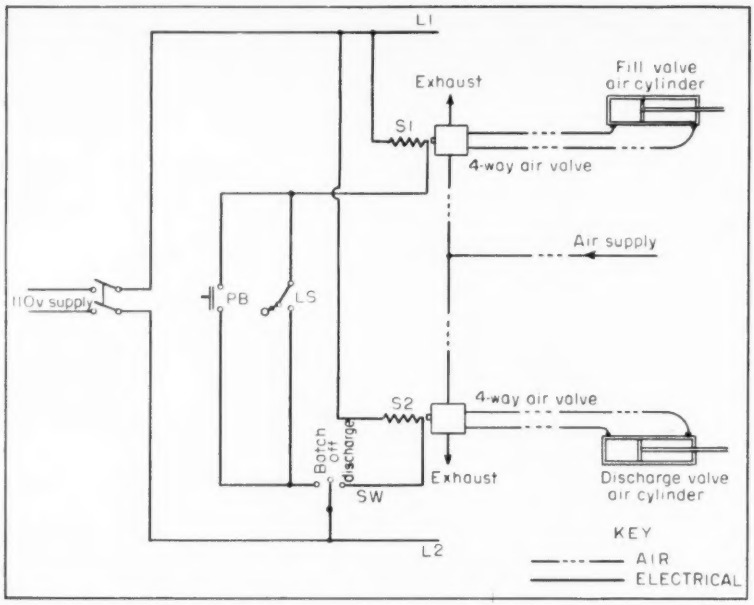


**AIR-OPERATED** semi-automatic single-material batchers are available if the air cylinder can be controlled by a solenoid air valve. Sketch indicates simple circuit required.

is closed when the scale is out of balance and opens during the weighing cycle when the batcher is almost up to weight. The operator starts the batcher by turning the selector switch SW to "batch", thus energizing the fill valve air cylinder solenoid S1. The fill valve opens and remains open as long as the solenoid is energized. When near final weight is reached, the limit switch LS opens and the fill valve closes.

The operator finishes the weighing by operating the push button PB which establishes a new circuit, thus opening the fill valve and holding it open as long as the push button is held closed. He has full control of the opening and closing of the fill valve. To discharge he turns the selector switch SW to discharge, energizing the discharge gate air cylinder control solenoid S2, and the air cylinder opens the discharge gate. As soon as the weight in the weigh hopper falls below the "near final weight" cut-off point, the switch LS closes, setting up the fill circuit for use when the operator again turns the selector switch to "batch."

The circuit for full automatic operation of a single material batcher is almost as simple if no interlocks are required. This circuit and its operation will be described in a subsequent section.

Single-material batchers are so simple that, except for the scale, they require no babying and little maintenance. The valve and gate pins or shafts should be greased regularly. Seals on the cement batchers should be inspected regularly and adjusted or replaced if there is cement leakage. The hopper sides and bottom should be inspected about once a month and a patch plate welded to the inside over thin places before the hopper actually wears through at these points.

• **Multiple or cumulative batchers** weigh up materials one after another in a common weigh hopper suspended from one scale lever system. The cumulative weigh batcher is more generally known as a multiple batcher.

If the scale is equipped with a dial for direct reading of the weight, the weighing operation is different from when the scale is equipped with weighbeams and a balance indicator.

• **Multiple batchers with full reading dials** are handy. Suppose a batch requires 1,400 lb of sand, 700 lb of stone No. 1 and 1,000 lb of stone No. 2. The batcher is equipped with a dial. The operator first weighs up the 1,400 lb of sand, cutting off the flow when the dial pointer shows 1,400 lb of material to be in the weigh hopper. He then adds stone No. 1 until the dial pointer points to the 2,100-lb mark. He finishes the batch by adding

*(Continued on page 115)*

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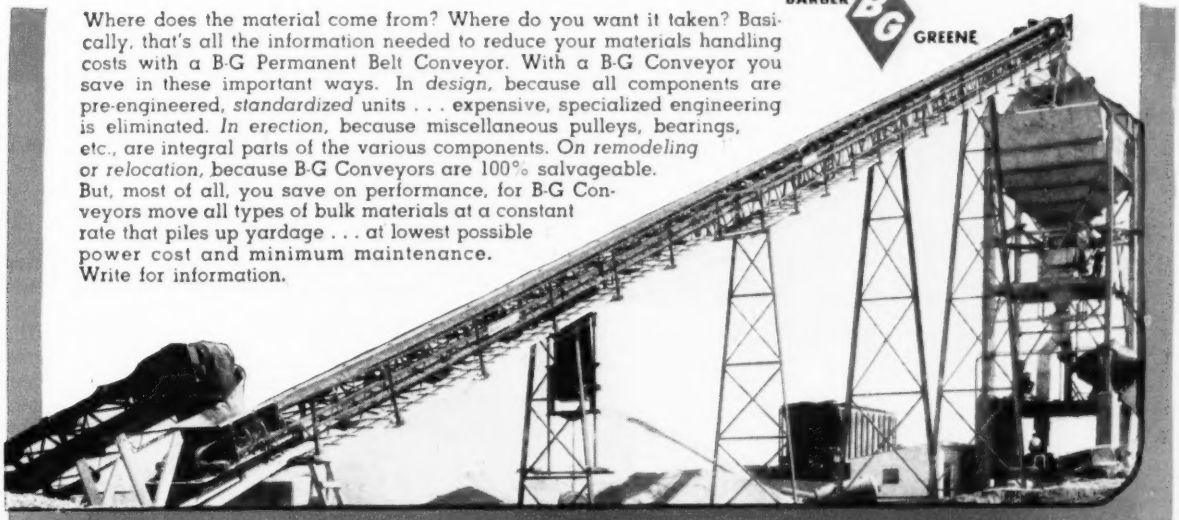

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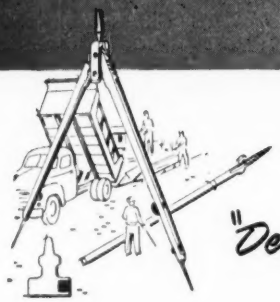

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**CONCRETE . . .**
**Continued from page 112**

stone No. 2 until the pointer reads 3,100 lb.

• **Multiple batchers with indicators and weighbeams** have balance indicators. There is always one weighbeam for each material. A four-material multiple batcher will have four fill valves and four weighbeams. The weighbeams are connected one to another by linkages and the top beam is connected by a similar linkage to the scale lever system. A latch, one for each weighbeam, is provided to allow "locking out" each beam, removing the effect of that weighbeam from the scale system. To make up a batch as above, the operator first "locks out" all weighbeams and then sets the poise weight on the top weighbeam for 1,400 lb, the poise weight on the second weighbeam for 700 lb, and the poise weight on the third weighbeam for 1,000 lb.

The top or first beam is the sand beam, the second the stone No. 1 beam, and the third the stone No. 2 beam. He then unlocks the sand weighbeam which throws the scale out of balance. Sand is added to the hopper until the indicator shows the scale to be in balance, meaning that the weight of the sand in the weigh hopper equals the poise weight setting. Leaving the sand beam unlocked, or on the scale system, he next unlocks the stone No. 1 weighbeam, throwing the scale out of balance, and adds the stone to the weigh hopper until the scale is again in balance.

The two weighbeams exert a combined effect on the scale system which takes a total of 2,100 lb of sand and stone No. 1 to bring the scale in balance. The operator does not have to add the two figures to arrive at this total as he did in the previous example. He completes the batch by unlocking the third weighbeam and adding stone No. 2 until the scale again is in balance.

• **Multiple batcher sizes** range from 1 to 6 cu yd and they can be had arranged for two, three, four, five or six materials. Larger batchers can be bought on special order. The size ratings are based on the size of the concrete batch, not on the cubic content of the weigh hopper. In fact, a 1-yd weigh hopper must be large enough to hold much more material than required for 1 cu yd of concrete, because the hopper is not always

*(Continued on page 118)*

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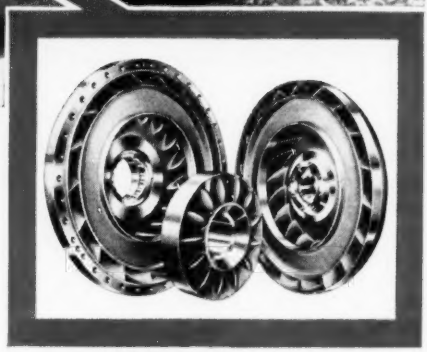

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In pointing up the stone work of the Washington National Masonic Memorial at Alexandria, Va., this company finds that the B&D Utility Saw speeds up the work tremendously . . . does the job fifteen times faster than former methods. Helps keep costs down so that lower bids can be submitted on contract work.

What's more, United Engineers find their B&D Utility Saws, and other B&D Portable Electric Tools, do not require costly maintenance. Even though tools take a beating in this line of work, they report no repairs in the five years B&D Tools have been in use.

Take it from the construction men who work with Black & Decker Electric Tools . . . they're "tops" in the trade. Put 'em on your heavy construction projects. A complete line of saws is available for every purpose. 6" to 9" wheel diameter models. From $56.50. See your B&D Utility outlet for demonstration. And write for the B&D Saw Catalog . . . it's free. Address: THE BLACK & DECKER MFG. Co., Dept. H630, Towson 4, Md.

Black & Decker

UTILITY

PORTABLE ELECTRIC TOOLS

# ITS DIET IS SAND AND WATER

Naylor pipe "eats up" sand, gravel and water wherever a construction job calls for this strict diet. Though light in weight, this distinctive lockseamed, spiralwelded pipe has the extra strength, leaktightness and safety that makes it outstanding for rugged service. It's easy to handle, install and knock-down—especially when used with Naylor Heavy-duty Wedge-Lock couplings. Sizes range from 4" to 30" in diameter. Write for Bulletins No. 507 and No. 513.

**NAYLOR PIPE**

**NAYLOR PIPE COMPANY**
1268 East 92nd Street, Chicago 19, Illinois
*New York Office: 350 Madison Avenue, New York 17, New York*


**CONCRETE . . .**
Continued from page 115

loaded uniformly throughout. For example, a two-material, 2-yd batcher weighing up the equivalent of the 1:2:4 batch must have room enough for approximately twice as much stone in the one end as sand in the other.

It is true that the materials tend to distribute throughout the hopper, but it is seldom that the materials are distributed uniformly. In the example given, if the stone were batched first, it would fill the bottom and run part way into the sand end. In this way more effective use of the hopper can be achieved.

### Big Hoppers

The fill valves for a multiple batcher usually are grouped as close together as possible to hold the size of the top of the hopper to a minimum, for the hopper must be wide enough and long enough to catch all the material as it flows from the fill valves. These valves are mostly radial or clam type and are bolted to the scale frame. A batcher for six materials will therefore have a weigh hopper which is quite long and quite wide.

Since the bottom must be sloped to the discharge gate, and since the slope cannot be less than 45 deg —steeper if the hopper is to be truly self-cleaning and to discharge without hang-up of the material—it follows that the hopper for six materials must be quite deep. It must be so large just to catch all the materials and to discharge them through a common gate that it is impossible to make a 1-yd size that will handle six materials.

No standards have been adopted by manufacturers for sizes of multiple batcher hoppers. All of them make hoppers large enough to accommodate the aggregates for normal concrete batches. It is therefore necessary for anyone contemplating unusual batches to make certain that the batcher he is buying will have a hopper of ample proportions.

Lightweight aggregates normally do not present a problem because the cubic feet of all the material for a lightweight concrete batch does not differ too markedly from the cubic feet of all the materials for a regular concrete batch of the same yardage. However, in this case it is wise to consult with the batcher manufacturer.

• **Dial and weighbeam capacities** should be considered carefully. If the batcher has a full reading dial, capacity of the dial is related directly to size of the batcher, since the weight of the aggregates for a 1-yd batch generally will run from 3,500 to 3,800 lb. If the batcher is equipped with weighbeams and a balance indicator, it is important to have the capacity of the weighbeam equal to, or greater than, the greatest weight of any of the materials likely to be batched. Except for special batchers, all the weighbeams for a multiple batcher have the same capacity. If the weighbeam capacity is less than the greatest weight to be weighed, the batcher cannot be used efficiently.

Anyone planning the purchase of a batcher to be used for quantities of materials that deviate widely from normal for the size of batch should check requirements against manufacturers' standard units. The accompanying table gives normal dial and weighbeam capacities for various sizes of batches.

• **Selection of a multiple batcher** should be done with the future in mind. First, multiple batchers generally are made for the batching of aggregates only. They may be purchased in a design for batching aggregates and cement, but the *buyer should hesitate before buying one of this type* because most state specifications require that cement be weighed on a separate scale. Multiples in which aggregates and cement are weighed on the same scale cannot be converted readily to two batchers with separate scales.

Prospective buyers would be wise to buy multiples that have provision for all the materials they will likely want to batch in the future. And the size should be selected to take care of future requirements. Both the number of materials and size of batch establish dimensions of the weigh hopper. Size of hopper, in turn, establishes the floor space and height in the plant that will be required. While it is not too great a loss to replace the batcher because it is inadequate, it is not possible to fit a larger batcher in an existing plant without almost completely rebuilding it. In most cases, the cost becomes prohibitive.

Multiple batchers with air cylinder-operated fill valves and discharge gate are well worth considering because of lightened load on the operator. They are almost a must if the batcher is to be operated from a remotely located station. Unlike the single-material batchers, semi-automatic operation is not practical.

Full automatic multiple batchers are commanding some interest at the present time. They will be discussed in some detail in a subsequent section.

*(Continued on page 120)*

## MULTIPLE BATCHERS

| Batch Size | *Dial Capacity | WEIGH BEAM CAPACITY Two Material | Three Material | 4, 5 & 6 Materials |
|---|---|---|---|---|
| 1 cu yd | 5,000 lb | 3,000 lb | 2,000 lb | 1,500 lb |
| 1¼ cu yd | 5,000 lb | 3,000 lb | 3,000 lb | |
| 2 cu yd | 10,000 lb | 6,000 lb | 4,000 lb | 3,000 lb |
| 3 cu yd | 15,000 lb | 9,000 lb | 6,000 lb | 4,500 lb |
| 4 cu yd | 20,000 lb | 9,000 lb | 7,500 lb | 6,000 lb |
| 5 cu yd | 20,000 lb | 12,000 lb | 9,000 lb | 7,500 lb |
| 6 cu yd | 25,000 lb | | 12,000 lb | 9,000 lb |

*Dials are usually made in the following capacities: 5,000, 6,000, 8,000, 10,000, 15,000, 20,000 and 25,000 lb. Others are special.


# Building Up Weak Shoulders

WITH THE H & B **Moto-Patcher**

The Virginia Department of Highways has found the Moto-Patcher highly efficient for building up weak shoulders, as well as for straight patching. This mobile mixing unit delivers up to 10 tons per hour of freshly mixed material.

The automatic control of the metering of the asphalt and feeding of the aggregate assures a *constantly uniform mix.* The 400 gallon tank, which is *an integral part of the unit,* provides an adequate supply of bitumen, making frequent stops unnecessary.

Aggregate may be either shoveled into the hopper or fed in by gravity directly from a truck, by means of a small elevator (optional equipment). The mixed material is deposited on a pan of convenient height for easy shoveling, or it can be dropped directly onto the road surface.

Additional optional equipment includes a dryer, especially designed for use with the Moto-Patcher, and a spreader attachment which is fully adjustable to the specified grade and crown, insuring a smooth surface even on irregular pavement.

**For further information on the Moto-Patcher, see your H & B distributor or write for new Bulletin MPD-53.**

**HETHERINGTON & BERNER INC.** • *Engineers—Manufacturers*

**735 Kentucky Avenue** **Indianapolis 7, Indiana**

**CONCRETE . . . Continued from page 119**

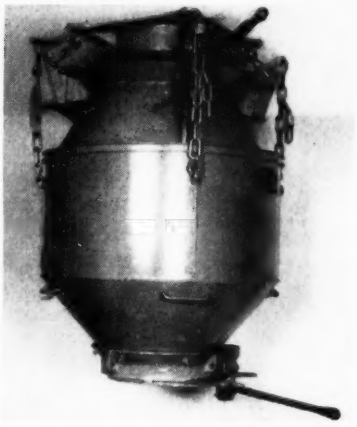
Multiple batchers, as is to be expected, will require a little more attention and maintenance than single-material batchers. Excluding the scale system, only periodic greasing of valve and gate pivots and operating linkages, patching of thin hopper sides and bottoms will be required.

## Single-Material vs Multiple Batchers

SINGLE-MATERIAL BATCHERS:

**1.** Generally produce more accurate proportioning because the weighing of one material is unaffected by the weighing of another. In cumulative weighing any shortage or excess of one material will, in all likelihood, be balanced by an excess or shortage of the next material.

**2.** Allow overloads to be more readily removed. Excess of any material may be retained in the hopper by closing the discharge gate before all the material has passed from the hopper, if the batcher is equipped with a radial or clam gate. If necessary, the batch of any one material may be discharged and wasted without disturbing other materials.



VOLUMETRIC (single material) batcher of the early days; displaced by weigh batchers.

**3.** Permit checking of actual weight of each material at any instant prior to the time when the batchers are discharged.

**4.** Eliminate the possibility of "pulling a wrong fill valve lever"; it can happen with multiple batchers.

**5.** When equipped to weigh automatically, they are faster than multitple batchers since materials can be weighed simultaneously.

**6.** Are better adapted to automatic operation and recording of weight because the electrical circuits are much simpler and less likely to cause trouble.

MULTIPLE BATCHERS:

**1.** Generally are lower in cost because only one scale system is involved. This statement applies only when comparing a multiple-material batcher with the requisite number of single-material batchers.

**2.** Are more compact, require less space in the concrete plant.

**3.** Do not require a collecting hopper below to collect and direct the material into a mixer or a batch truck.

**4.** When manually operated, require less maintenance because there is only one scale system.

**5.** Have the fill valve and discharge gate operating levers grouped better. This results in a minimum of lost motion for the operator.

* * *

**The third article of this series will appear in the December issue.**

**How New York's Skyline is marked out with BERGER TRANSITS**

Name an important New York skyscraper built in the last 40 years. Chances are Earl B. Lovell-S. P. Belcher, Inc., New York's leading title company surveyors, did the Title and construction surveying – *using Berger Instruments exclusively.* The United Nations Building, Lever House, Empire State, Chrysler East and Look Buildings – to name a few.

"Very little margin for closure error here," says R. M. Holahan, the company's Chief of Field Parties, "no more than is consistent with the world's highest property values involved." And that means accuracy like this –

**"Error of starting base lines, on which accuracy of all subsequent work depends, must be almost infinitesimal."**

**"No work can be more than 1/16" from correct position in marking out building lines; maximum variation 1/8" over entire lot."**

**"Horizontal alignment of base plates for steel framework must be within a maximum error of 1/8" on any one steel span."**

All this under most difficult surveying conditions: where traverse around a piece of property, often entirely occupied by buildings, must be over roofs of varying heights. Where the engineer must, on a new building, lay out foundations – align steel framework story-by-story – establish lines for exterior masonry walls – make final enclosure survey of completed building.

E. F. Sullivan, Lovell-Belcher engineer, behind a new Berger 6¼ R Transit.

*"We use only Berger Instruments because they are the only transits that have given us the consistently accurate results our type of surveys demands," says Mr. Holahan.*

*"When we get on a point, we know it's there and not an ¼" away. We like the way it focuses on close distances, its sensitive bubble. The plates and verniers read close and are consistent with the power of the telescope. We have no trouble with tight screws or telescope focusing in cold weather."*

Such accuracy in action is one of the many important reasons why so many leading engineers buy only Berger.

C. L. Berger & Sons, Inc., 37 Williams St., Boston 19, Mass.
342 Madison Ave., New York 17, N. Y.

Write for a copy of "ACCURACY IN ACTION"

THE BEST IN SIGHT IS BERGER

ENGINEERING AND SURVEYING INSTRUMENTS . . . SINCE 1871

no other grader offers you this

# UNBEATABLE COMBINATION

## all-wheel drive

### wakes up the front wheels

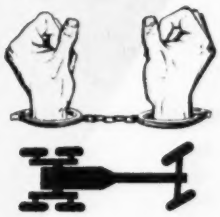
The front end of the ordinary motor grader is lazy, dead weight, contributing nothing to traction.

On the Austin-Western Power Grader, every pound rides on a driving wheel, contributing 100 per cent to traction.

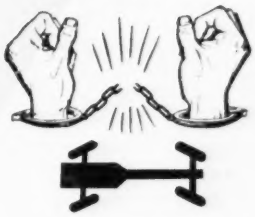
## all-wheel steer

### frees the rear wheels

Non-steerable rear wheels slow-down all operations, make them more difficult.

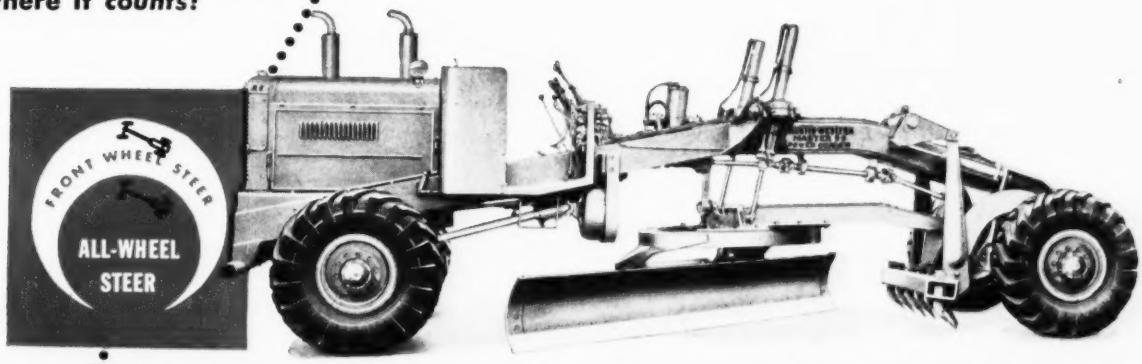


Steerable rear wheels speed up every job, make it easy to do things impossible for other graders.



### Twice the maneuverability

**30% more POWER at the blade—more power where it *counts!***




***No wonder . . .*** Austin-Western "88-H," "99-H" and Master "99" Power Graders, with their finger-tip hydraulic control and unequaled stamina, plus exclusive All-Wheel Drive and All-Wheel Steer, outpull, outmaneuver and just naturally outperform all others.

**Austin-Western**

**Power Graders · Motor Sweepers**
**Road Rollers · Hydraulic Cranes**

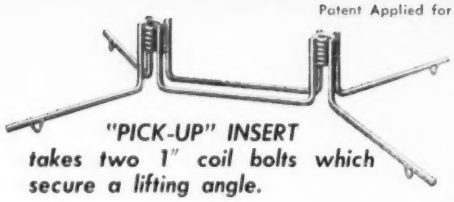
BALDWIN LIMA HAMILTON BLH

Construction Equipment Division

*Manufactured by*
**AUSTIN-WESTERN COMPANY**
*Subsidiary of Baldwin-Lima-Hamilton Corporation*
**AURORA, ILLINOIS, U.S.A.**

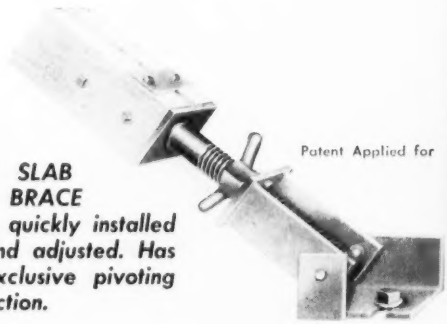
# 3 SUPERIOR ACCESSORIES FOR more efficient handling of "TILT-UP" SLABS

Patent Applied for



***"PICK-UP" INSERT** takes two 1" coil bolts which secure a lifting angle.*

***"ANCHOR" INSERT** in both the "Tilt-Up" slab and the floor slab provides anchorage for slab brace bolts.*



Patent Applied for

***SLAB BRACE** is quickly installed and adjusted. Has exclusive pivoting action.*

Are you bidding on a "Tilt-Up Slab" job? Are you starting a "Tilt-Up Slab" Job? Then you will be interested in these SUPERIOR accessories, designed for faster and more efficient handling of precast panels.

The Superior *"Pick-Up" Insert* provides dependable anchorage for bolts which secure a lifting angle to which slings are attached when the panel is raised. *"Anchor" Inserts* in both the "Tilt-Up" slab and the floor slab secure the temporary bolts to which the braces are attached. With Superior's adjustable and pivoting *Brace* you have an efficient as well as inexpensive answer to both ordinary and unusual bracing problems . . . you merely assemble with 2 x 4's of lengths to fit individual jobs.

Wherever slabs are being "tilted-up" . . . on the Pacific Coast . . . in the Midwest . . . the South, and in the East . . . contractors are consistently using Superior Inserts, Anchors and Braces. For details request a copy of Bulletin TU-2.

## SUPERIOR CONCRETE ACCESSORIES, INC.

**4110 Wrightwood Avenue, Chicago 39, Illinois**

*New York Office*
**1775 Broadway, New York 19, N. Y.**

*Pacific Coast Plant*
**2100 Williams St., San Leandro, Calif.**

RIGGED AS DRAGLINE, pilot model of Bay City Shovel's Model 700 goes to work for Raymond La Joie, Caro, Mich., on drainage job after one-year field tests. La Joie is using 1½-yd Page bucket with 50-ft boom.

# Biggest Bay City Crawler: Popular Design With Extras

BIGGEST MACHINE ever put on crawlers by Bay City Shovels, Inc., of Bay City, Mich., the Model 700 steps out with a lot of new ideas to add to basic design features that have proved popular on previous models. The 700, so far, is rigged up only for crane, clamshell and dragline work. Shovel and backhoe front ends will be worked out later.

The unit weighs around 40 tons, yet can be stripped down to less than 25 tons for moving on a trailer. As a crane, the machine is rated at 46,000 lb at 12-ft radius with 45-ft boom. But it also is built for long-boom work, and can handle 15,300 lb at 25-ft radius at the end of a 100-ft boom.

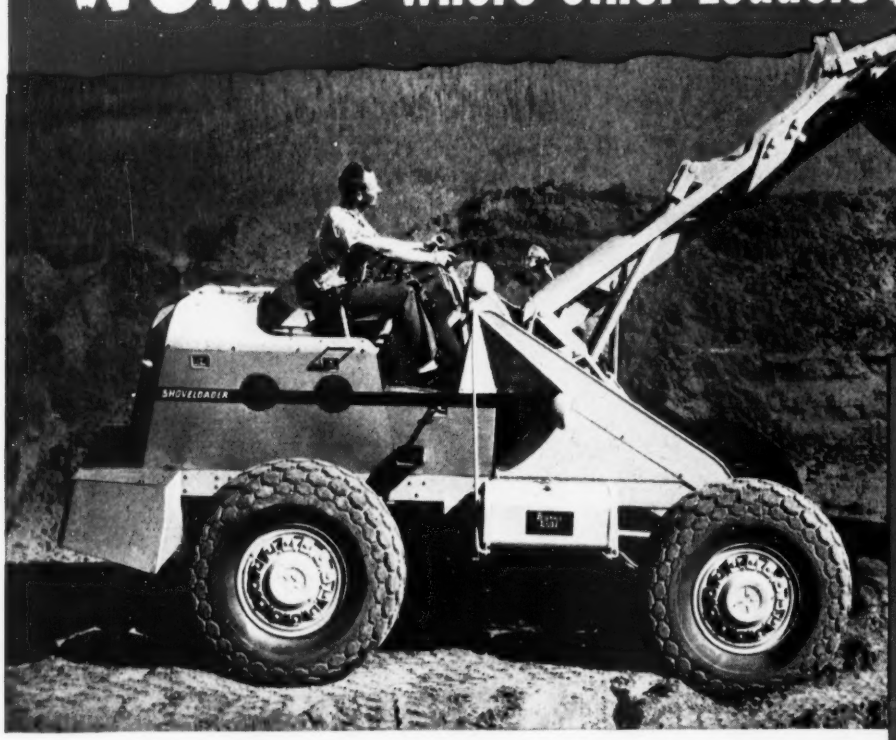
New features start with the power plant—a 6-cyl Cummins HRBI-600 diesel rated at 115 hp at a moderate 1,300 rpm, controlled by a Woodward hydraulic governor. A combination of Twin-Disc hydraulic coupling and a Twin-Disc two-plate disconnect clutch cushions shock on the power take-off. Engine, clutch and coupling are mounted rigidly on a fabricated base.

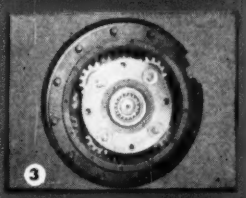
For several years Bay City has been using internal shoe-type clutches on swing drums. On the 700, this same clutch has been adapted to the main drums. These drums, incidentally, are set in tandem on separate shafts. Load drums are straight barrel, fitted with grooved lagging to take 470

*(Continued on page 125)*

# NEW 4-WHEEL DRIVE Shoveloader

# WORKS where other Loaders FAIL!





This powerful new Shoveloader is designed and built for *HEAVY* work under the toughest conditions. Outstanding features—many of them exclusive—permit top capacity performance in extremely rough terrain, where other units falter and fail . . . Power from the heavy-duty gas or diesel engine is applied through positive 4-wheel drive, 5-speed transmission, forward and reverse . . . Positive 25" downcrowd, bucket width completely covering wheel tread, and operator control of tilt in any position, provide maximum digging and stripping effectiveness. Operator's position insures maximum visibility and safety.

*Equipped with 1½ cu. yd. bucket as standard. Also available: 1¼ yard heavy duty and 2½ yard light material buckets, pallet forks, backfill blades and crane hook attachments.*

***Write for eight-page illustrated Bulletin AD-55, containing complete description and specifications.***

**1.** Rear axle oscillates 23° about longitudinal axis for maximum ground pressure on all four wheels at all times. Hi-flotation type tires permit operation in soft or rough ground.

**2.** Positive 4-wheel, 5-speed transmission, and 100-inch wheelbase enable unit to negotiate steep earth banks, ramps or obstructions. Hydraulic power steer. Front or rear wheel steer optional. 4-wheel steer available

**3.** 3 to 1 Planetary gear reduction in each of four wheels reduces torque 300% in axle shafts, gear case and drive shaft to prevent axle and drive line failure. 4 Planetary gears distribute load evenly to wheel-ring gears.

**4.** Unobstructed visibility enabling operator to see bucket in lowered position, increases safety and performance. Hydraulic arm-type loader has parallelogram action, with position lift and tilt controls.

**Baker Lull**

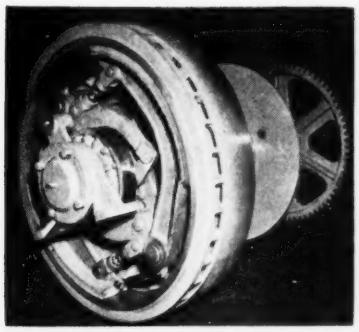
**handling equipment**

**THE BAKER-LULL CORP.**

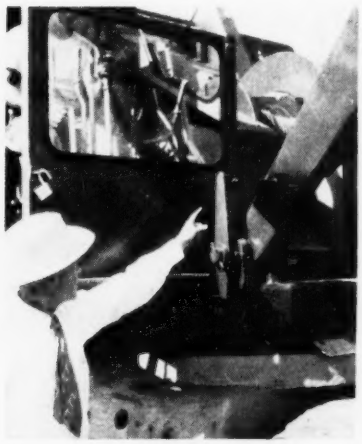
*Formerly the Lull Manufacturing Company*

**355 WEST 90th ST., MINNEAPOLIS 20, MINN.**

*A Subsidiary of the Baker-Raulang Co., Cleveland 2, Ohio*



INTERNAL SHOE-TYPE CLUTCH, new feature, formerly restricted by Bay City to swing mechanism, is applied to main hoist drums. Alloy cast iron drums have combination flange for clutch and brake, separated by cooling fins. Main drum clutches are set by power booster shoe through minimum pull of hand lever. Clutch shoes have ¾-in. molded lining.



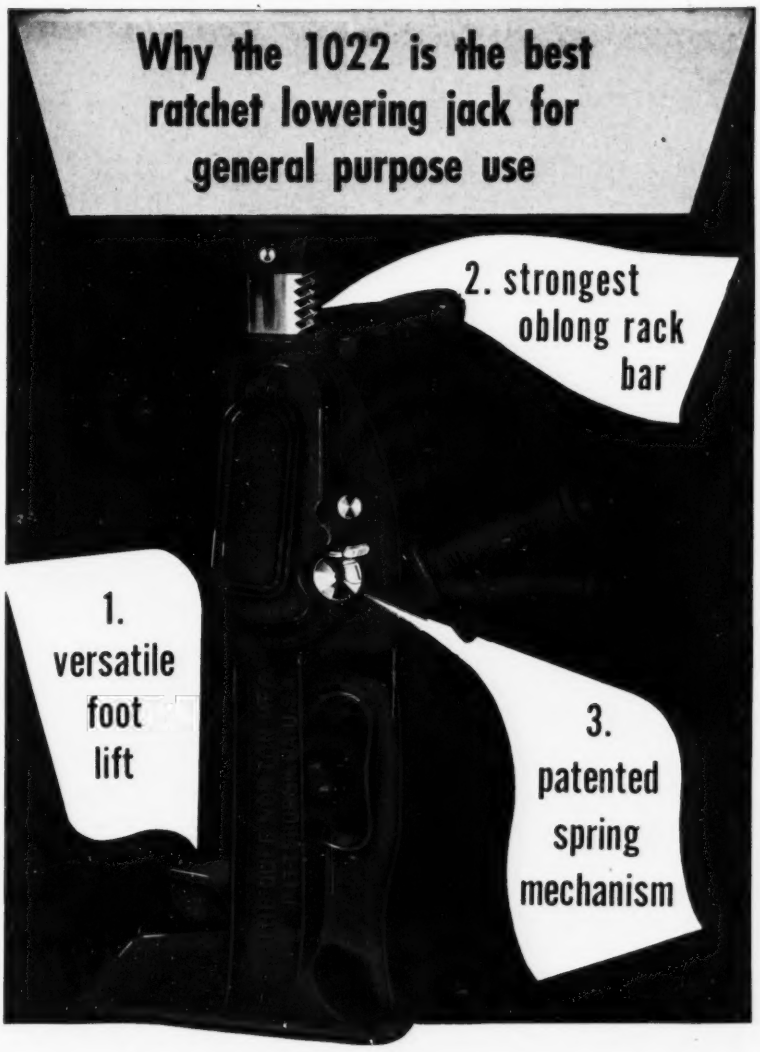
AUTOMATIC STOP that throws out hoist clutch when boom reaches maximum angle is pointed out by Art Reidinger, Bay City sales manager, who is justly proud of this safety feature.

ft of ¾-in. wire rope or 385 ft of ⅞-in. rope.

Another new feature is an independent boom hoist mounted vertically in rear of cab where it is readily accessible, conserves space and gives better cable alignment. The hoist is worm and worm wheel type, powered direct from gear case through two Twin-Disc clutches giving positive power control for both raising and lowering. Two automatic brakes on the boom hoist provide double safety. Then, too, there is an automatic throw-out clutch device that stops the hoist when the boom reaches maximum angle. A collapsible Hi-gantry permits raising of boom.

Basic features carried over from previous models include one-piece

*(Continued on page 127)*



Why the 1022 is the best ratchet lowering jack for general purpose use
2. strongest oblong rack bar
1. versatile foot lift
3. patented spring mechanism

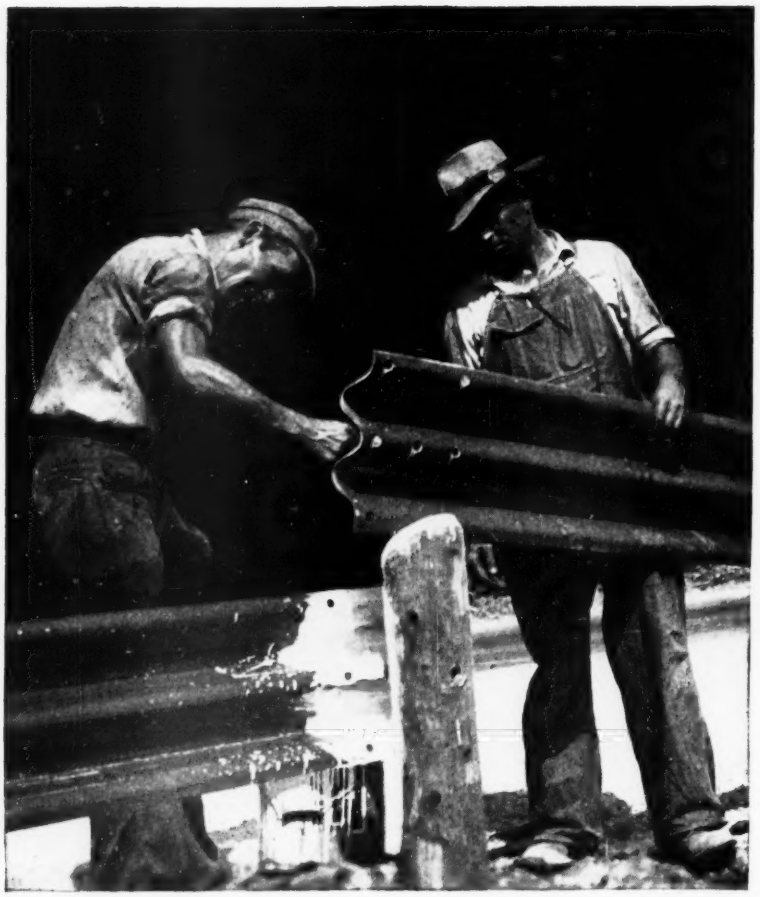
This rugged 10-ton Jack is one of the most popular in the Duff-Norton line for average lifting, lowering, and pushing jobs because (1) It can use its foot as well as its head; (2) It has the strongest rack bar of any jack of its weight and capacity; (3) It is equipped with the exclusive, patented spring mechanism which assures absolute safety and longer trouble-free service life.

If you are not using the famous 1022 in your shop, get the complete specifications on this and the many other Duff-Norton Jacks. Call your local distributor or write the world's oldest and largest manufacturer of lifting jacks. Ask for catalog 203T, The Duff-Norton Manufacturing Company, P.O. Box 1889, Pittsburgh 30, Pa. Canadian plant—Toronto 6, Ontario.

**DUFF-NORTON**

*"Giving Industry A Lift Since 1883"* **Jacks**

# Put in posts, bolt on guardrail... JOB DONE!



The speed and simplicity of installing Armco FLEX-BEAM Guardrail make it easier to submit profitable, job-winning bids. All you need are posts, guardrail sections and bolts. And installation goes fast even with small, untrained crews.

FLEX-BEAM Guardrail can be installed on wood, metal or concrete posts of any shape, spaced 12½ feet apart. Sections are spliced by seven bolts, the center bolt holding the rail to the post. There are no springs, turnbuckles, deadmen or castings to install. And because each section weighs less than 100 pounds, handling is easy. Even on curves, installation goes fast because no tension or stretching is required. Labor costs stay low.

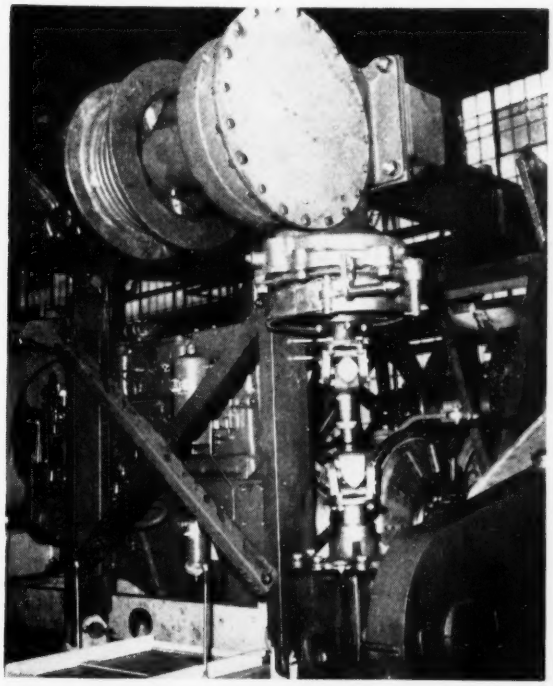
Highway officials approve Armco FLEX-BEAM for both main highways and secondary roads. They know its high visibility warns of danger and its strong, flexible beam action absorbs and cushions impact. Colliding vehicles glide along its smooth surface, aiding the motorist in regaining control of his car. Maintenance costs are low.

Next time, try bidding jobs with easily-installed Armco FLEX-BEAM Guardrail. Write for more data and also ask about FLEX-BEAM Bridge Rail. Armco Drainage & Metal Products, Inc., 4123 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. Export: The Armco International Corporation.

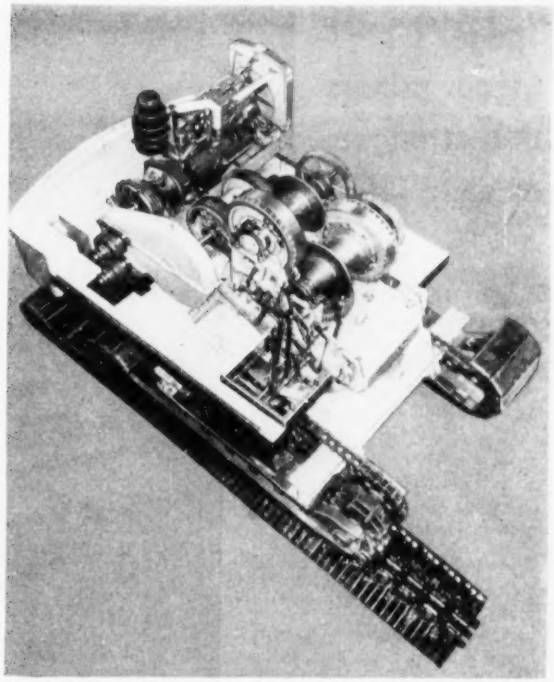
## Armco FLEX-BEAM Guardrail

ARMCO

**BIG CRAWLER** . . . Continued from page 125

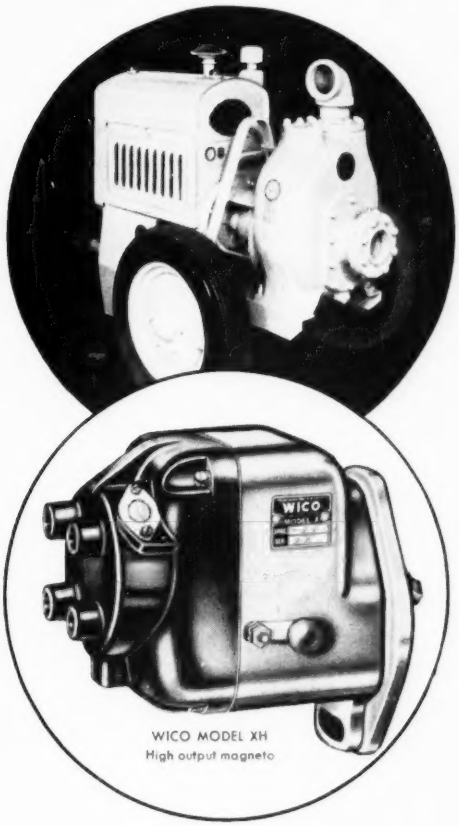


VERTICALLY MOUNTED independent boom hoist is readily accessible at rear of cab, conserves space and offers excellent cable alignment. Hoist is worm-drive through independently-operated Twin-Disc clutches that give positive control for both boom raising and lowering. Boom load is protected by two automatic brakes.



CLEAN-CUT MACHINERY ARRANGEMENT. Note how boom feet are directly over roller path. Engine, hydraulic coupling and clutch are mounted together on single base at rear. Boom hoist, normally behind main chain drive, is not shown in this view.

*(Continued on next page)*


WICO MODEL XH
High output magneto

# For power when you need it— choose WICO MAGNETOS

Construction equipment has to work any time, in any weather—and that's tough service for ignition systems. That's why leading manufacturers put Wico Magnetos on many of their engine-driven units. The CMC Centrifugal pump shown at left, for example, is powered by a Hercules IXB engine equipped with a Wico Magneto.

The Wico XH Model, widely used on construction equipment, is heavy-duty in every way. Features like its weather-proof plastic-jacketed coil, one-piece cast rotor, hefty tungsten contacts and pre-lubricated bearings add up to real ruggedness that withstands any field conditions.

For ignition that delivers power whenever you need it, look for Wicos on your new engines. And always replace with a Wico when you do an overhaul.

Your nearby Wico Station will give you prompt service. For full details, write to us today.

**WICO ELECTRIC CO.**

**West Springfield Massachusetts**

*Manufacturers of Wico "Autostop" and the "Puff-A-Lite" Automobile Lighter*

WICO

## Jaeger's bigger pumps pull stronger at easy 1200 rpm

Jaeger "Sure Prime" Pumps are built oversize with larger shells and impellers. They hold more priming water and are subject to less abrasive wear. These big pumps are designed with 2 independent, simultaneous priming actions, the only positive self-lubricating seal and engines of the largest horsepower applicable. They deliver full volume at an easy 1200 rpm, priming at only 1400 rpm compared with up to 2000 rpm for ordinary pumps.

No vapor lock even when pulling high vacuum on long intake lines — sustained efficiency on non-stop pumping, and thousands of extra hours of service from both pumps and engines.

*See your Jaeger distributor or send for Catalog P-10*

**THE JAEGER MACHINE COMPANY** 800 Dublin Avenue Columbus 16, Ohio

COMPRESSORS • MIXERS • TRUCK MIXERS • PAVING MACHINES

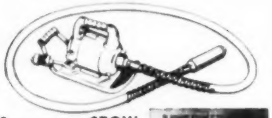


# Concrete facts about Concrete Vibrators and Screeds

In beam sizes up to 30'. 2 HP air-cooled engine. Mounted on 4 multiplane vibration dampeners. Also available without beam.

**Model AGW**
4½ HP 4 cycle air-cooled engine, automatic centrifugal ball bearing clutch, delivers 6000 to 9300 VPM, with wheelbarrow mount.

**Model BU**
2 HP at 9000 VPM
115 V. AC or DC



**See your STOW distributor about STOW vibrators and screeds today. Send for free Bulletin 526.**

**STOW is the name you want!**

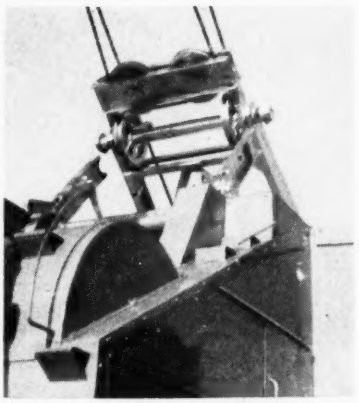
The high operating speeds of the new STOW line of Concrete Vibrators make possible the use of heavy duty, light weight flexible shafting and lighter, more efficient vibrator heads—which speed operations, cut costs. And, STOW design provides convenient, practical speed control so *attachments may be used directly on the vibrator shafts.*

STOW SCREEDS—permit placing more than 300 cu. yds. in less than 8 hours; strike off and impact in one operation; leave surfaces true to grade; work up to and around manhole covers and obstructions.

STOW

**STOW MANUFACTURING COMPANY**
31 Shear Street Binghamton, New York


**BIG CRAWLER . . . Continued**



COLLAPSIBLE Hi-gantry is equipped with floating bridle and 4-part line for boom hoist. Shipping clearance height can be reduced by lowering gantry.

alloy steel castings for upper and lower bases; large diameter roller path cast integral with lower base; numerous anti-friction bearings, even for boom point sheaves, and mechanical controls with power boosted clutches.

Standard boom is 45 ft long, made up of two sections, but inserts 5, 10 and 20 ft long are available to extend the boom up to recommended maximum length of 100 ft. Adjustable jib extensions, 15 and 30 ft, also are available.

It looks like a sweet-running rig.

### SPECIFICATIONS
### Bay City Model 700

CRANE RATINGS (example):

| | |
|---|---|
| 45-ft boom— | 7,500 lb at 45-ft radius |
| | —16,000 lb at 12-ft radius |
| 60-ft boom— | 4,600 lb at 60-ft radius |
| | —32,700 lb at 15-ft radius |
| 80-ft boom— | 3,150 lb at 70-ft radius |
| | —21,400 lb at 20-ft radius |
| 100-ft boom— | 2,700 lb at 70-ft radius |
| | —15,300 lb at 25-ft radius |

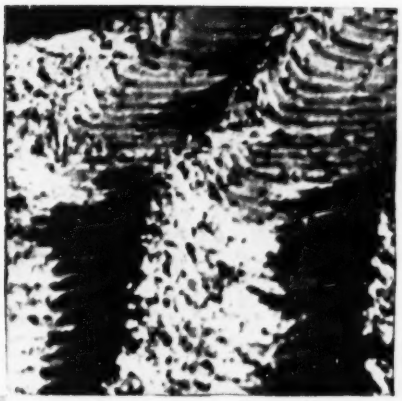
DIMENSIONS:

| | |
|---|---|
| Width cab | 10 ft |
| Gantry height, raised | 13 ft 4 in. |
| Gantry height, lowered | 12 ft 4 in. |
| Rear end radius | 11 ft 4 in. |
| Crawler bearing length, standard | 11 ft 4 in. |
| Crawler bearing length, long | 13 ft 5 in. |
| Width shoes, standard | 30 in. |
| Width shoes, long | 34 in. |
| Ground bearing press., standard | 9.12 psi |
| Ground bearing press., long | 7.14 psi |
| Weight, on standard crawlers | 74,000 lb |

GENERAL:

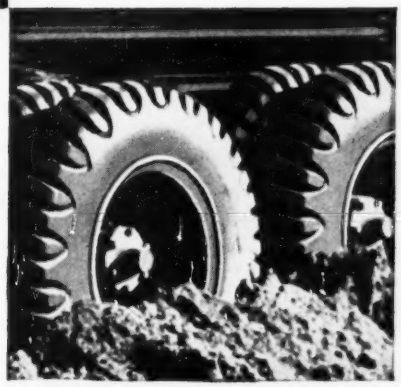
| | |
|---|---|
| Swing speed | 4¼ rpm |
| Travel speed, forward and reverse | 1¼ mph |
| Boom, 45-ft standard length | |
| 5, 10, 20-ft inserts | |
| Engine, Cummins HRBI—600 diesel, | 115 hp |
| Fuel tank | 65 gal |
| Electric starter | |

# THE TRACK OF A



# Mack TELLS A

# STORY OF Power



Ever notice the ground where a Mack six-wheeled truck has passed over? No scuff marks here. The track of a Mack tells a story of unfaltering traction . . . of surefooted, relentless driving power.

The "reason why" is found in Mack's Balanced Bogie with exclusive inter-axle and inter-wheel Power Dividers that assure positive traction under the most adverse conditions. Acting normally as a true differential, the Power Divider delivers torque between the bogie axles and wheels in proportion to wheel traction, thus eliminating useless wheel slippage and spinning.

Your nearest Mack branch or distributor will show you how Mack six-wheelers can keep your big loads moving fast—no matter how tough the terrain—on dependable, time-saving, cost-cutting schedules.

Mack TRUCKS

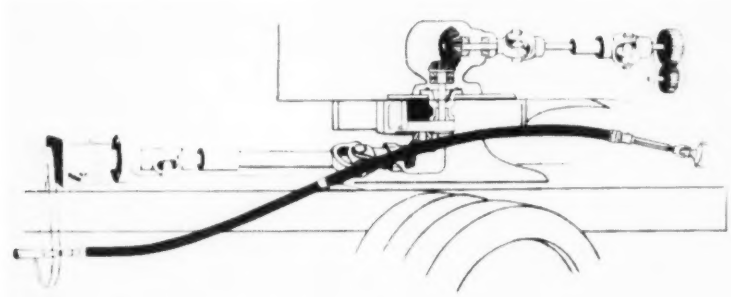
1726

***. . . Outearn Them All***

Mack Trucks, Empire State Building, New York 1, N. Y. Factory branches and distributors in all principal cities for service and parts. In Canada: Mack Trucks of Canada, Ltd.

# Power Take-Off Drive for Trailers

TRUCKING OPERATOR uses the new Stow tractor-trailer take-off drive on a fleet of dump trailers. It is a flexible shaft arrangement with a telescopic bar and tube.



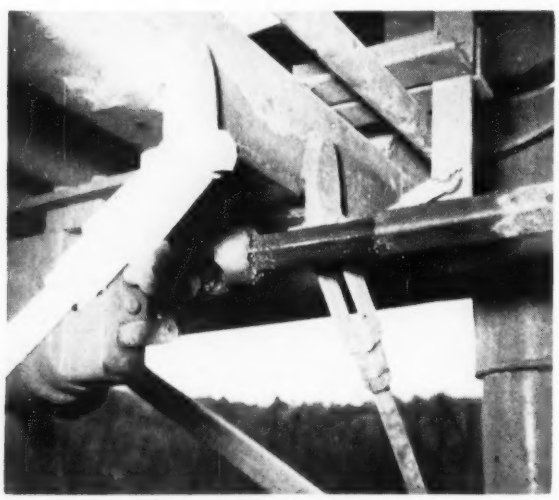
RESULT OF FIVE YEARS of engineering, the Stow power take-off drive provides dependable power for tractor-trailer units, designed to eliminate complex gearing.

LONG A BUILDER of power take-off drives for single-chassis trucks, Stow Manufacturing Co., Binghamton, N. Y., is now producing a flexible shaft arrangement for tractor-trailer units that completely eliminates complex gearing. It is claimed with this arrangement it is possible to get more efficiency and dependability with less maintenance.

According to the manufacturer, this flexible shaft arrangement eliminates expensive and delicate power couplers, increases pump life, gives quieter operation, provides easy interchangeability and is easy to install.

The unit consists of a flexible shaft which operates off the power take-off with a guide bar supporting the shaft to prevent it from hitting obstructions when the tractor-trailer unit jackknifes. An 1,800-in. lb universal joint is used between the pump and the telescopic rod so the flexible shaft will not be bent so severely.

The unit can be used satisfactorily with fifth wheel mountings.



UNIVERSAL JOINT and telescopic rod at close range. Note how the telescopic rod opens up to take care of the change in length when the tractor-trailer is jackknifed.

WITH THE DUMP BODY raised, the telescopic joint can be seen. Shown is the 4 ft of reinforcement which goes on the output end of the shaft so that the shaft may ride on a guide bar.

# when cost competition is tough, you can make

# "DIVIDENDS UNLIMITED"

## with *Ramset Fastening System*

## for anchoring into steel or concrete

With tighter competition for every job, super-speed RAMSET SYSTEM offers one sure way of cutting installation time and expense. You can figure the lowest "fastener-in-place" cost to help you get more business, at a profit.

For most work, nothing tops the new PLUS-POWER JOBMASTER, with two quickly interchangeable barrels, for ¼" or ⅜" fasteners. You save ⅓ on powder loads because it uses light-duty loads for many medium and heavy-duty jobs.

Tru-Set Fasteners, in 6 types and 60 sizes, give widest choice and utility. Exclusive Red-Tip Pilots and adjustable Roto-Set Shield guide them straight to the work with hair-line accuracy, for still greater economy without waste.

Whether your work calls for ¼", ⅜" or ½" fastenings, RAMSET SYSTEM aids you to out-quote competition, and pays "DIVIDENDS UNLIMITED" on a very small investment.

Ask your dealer to help you cut costs with RAMSET and give you an on-your-job demonstration and proof. Or, mail the coupon.

***Pioneer and Leader*** in powder-actuated fastening. Preferred by users 2-to-1 over all other makes combined. For six years, RAMSET SYSTEM has paid "DIVIDENDS UNLIMITED" to thousands of users because of ease, speed, economy and utility.

***Ramset Fasteners, INC.*** ANOTHER Olin PRODUCT

*Ramset Division, Olin Industries, Inc.*

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Please show us how we can collect "Dividends Unlimited" with RAMSET SYSTEM for steel and concrete fastenings.

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Company_____

Address_____

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CM-11

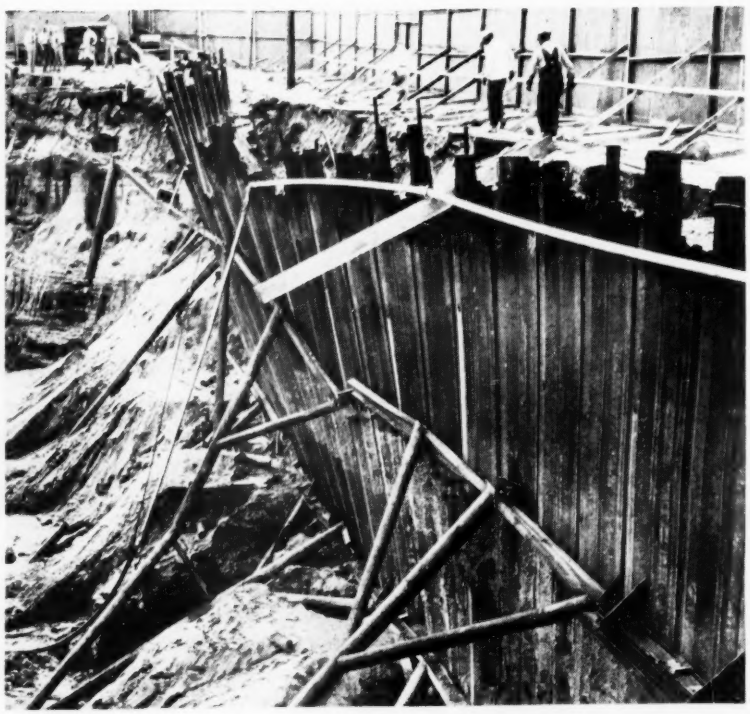
# Flood-Buckled Sheet Piling

A BELIEVE - IT - OR - NOT DELUGE of 4.6 in. rain in less than an hour in Denver last summer turned a routine excavation shoring procedure into a clever construction operation. Because of site and ground conditions, the George A. Fuller Co., contractor on the project, figured a line of steel sheet piling along only one side of the lot would be sufficient to protect the banks of the general lot excavation for the new 23-story Mile High Center office building at 17th Ave. and Broadway.

Straight-web steel sheets, 40 ft long, had been driven along the back sidewalk line at 17th Ave., giving ample protection to this bank, as the general lot excavation varied from 30 to 35 ft below street level. No sheeting was required on the other three sides, as it was possible to slope these banks.

A substantial berm, about 15 ft high above basement excavation level, was left in front of the sheet piling until the bracing and shoring could be installed. The shoring, worked out by G. Meredith Musick, associate architect on the project, consisted of heavy pipe rakers with pipe braces bearing against two lines of steel waling.

The shoring system was only partly in place when the storm struck with unprecedented fury the afternoon of July 9. Water piled up 4 ft deep on Broadway; sloping



CLOUDBURST BUCKLED STEEL sheeting in Denver along 17th Ave. side of Mile High Center office building excavation. Pipe shoring and bracing system was not complete when storm hit. Water overtopping sheeting and washing out berm, and pressure of surcharged fill behind sheeting, proved too much for the steel piling.

BROKEN STORM SEWER under the 17th Ave. sidewalk caved in and piled surcharge fill against sheeting. This is how the job looked next morning after the storm.

BUCKLED SHEETING was pulled back into position by block-and-falls anchored to steel piles driven along center of street. Tackle lines were handled by truck winches. Soldier beams, shown here, were driven in advance, and lagged to permit backfilling of street to grade.

# Straightened Without Pulling

17th Ave. became a raging river. An abandoned storm sewer under the 17th Ave. sidewalk—whose existence was revealed only after the storm—became alive and poured water through a break in the main against the sheeting about midpoint.

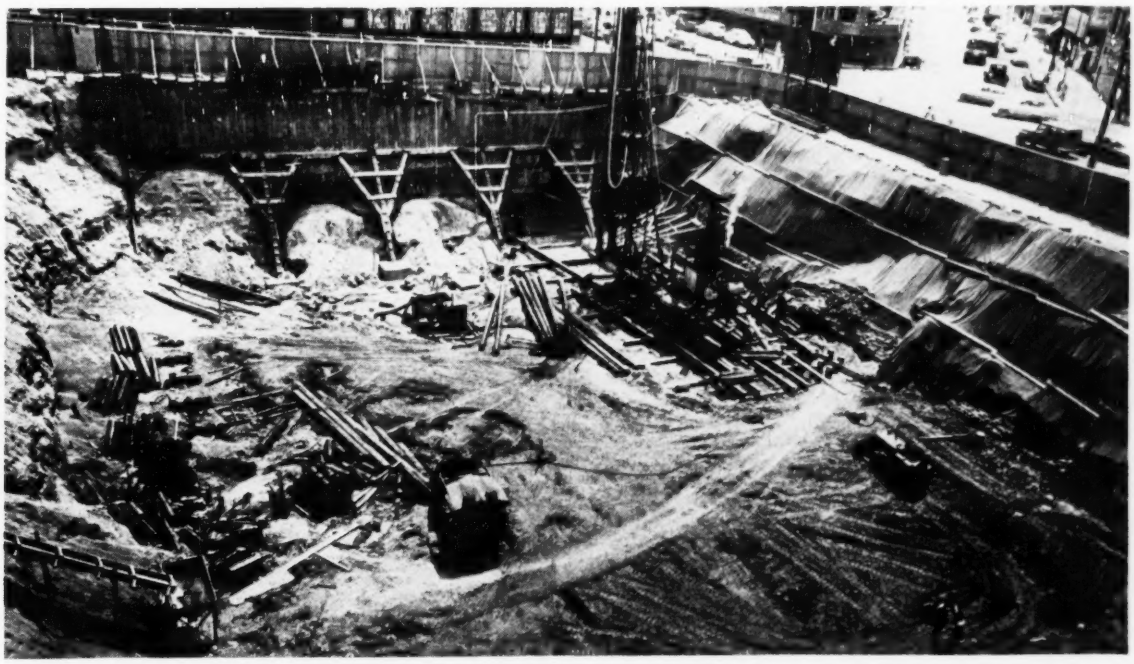
Water pouring over the top and the surcharged fill behind the sheeting were too much for the piles, and they buckled, as shown in the accompanying pictures. They might have stood up if all the shoring had been in place. After the rain ceased, water in the excavation soon drained out through the sand bottom.

Just about everybody connected with the project thought the wrecked sheeting would have to be pulled and replaced. That is, everybody except John Layter, Fuller's construction manager, and Henry Saxton, general superintendent. Between them, they cooked up a clever scheme for straightening the sheeting in place.

To restore the caved-in street, they drove a row of steel beam soldiers behind the sheeting, connected them with horizontal wooden lagging, and backfilled. Then they obtained permission from the city engineer to close 17th Ave. long enough to drive four steel-beam piles along the centerline of street.

Sets of block-and-falls with six-

*(Continued on page 136)*



TIED BACK at top with cables to piles in street, and braced from below by timber shoring system, sheet piling holds bank while berm is excavated to grade and Raymond rig finishes piledriving. Sandbagging holds sand layer and canvas protects sloping clay bank from erosion.

# pick up bigger payloads

***with "KOEHRING WORK CAPACITY"***

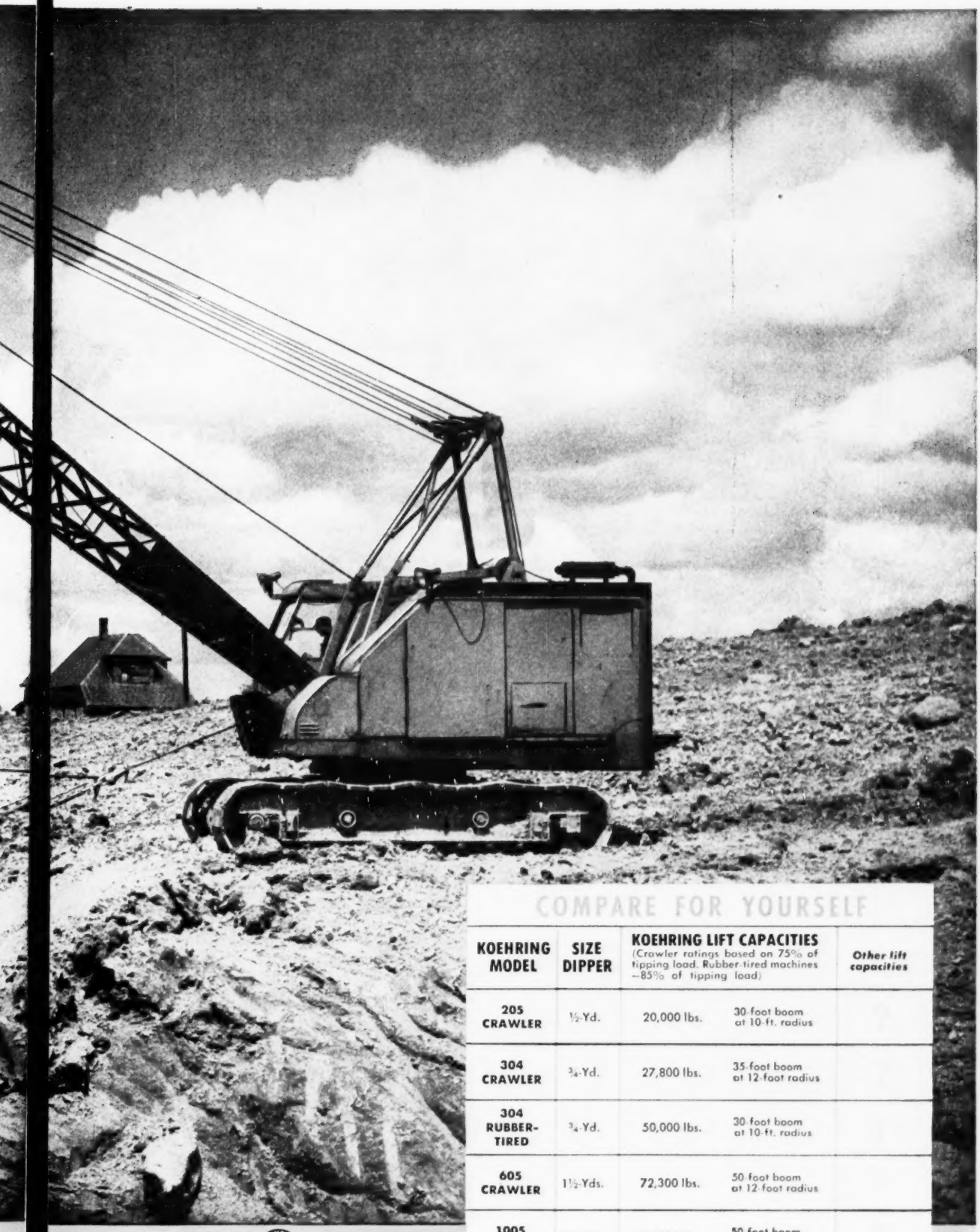
Big payload performance of Koehring cranes and excavators can be measured very quickly. Take a look at lifting capacities, for instance.

Obviously, the machine with the heaviest lift capacity not only picks up larger crane loads, it also has more power and stability to increase shovel or hoe production — handles bigger dragline and clamshell buckets on a wider work range.

Check lift ratings and other clear-cut measurements of "KOEHRING WORK CAPACITY", to insure biggest payload performance on all of your jobs. See Koehring distributor for all the facts.

**KOEHRING COMPANY** Milwaukee 16, Wis.

*Subsidiaries:* JOHNSON • PARSONS • KWIK-MIX



## COMPARE FOR YOURSELF

| KOEHRING MODEL | SIZE DIPPER | KOEHRING LIFT CAPACITIES (Crawler ratings based on 75% of tipping load. Rubber-tired machines —85% of tipping load) | | *Other lift capacities* |
|---|---|---|---|---|
| 205 CRAWLER | ½-Yd. | 20,000 lbs. | 30-foot boom at 10-ft. radius | |
| 304 CRAWLER | ¾-Yd. | 27,800 lbs. | 35-foot boom at 12-foot radius | |
| 304 RUBBER-TIRED | ¾-Yd. | 50,000 lbs. | 30-foot boom at 10-ft. radius | |
| 605 CRAWLER | 1½-Yds. | 72,300 lbs. | 50-foot boom at 12-foot radius | |
| 1005 CRAWLER | 2½-Yds. | 159,000 lbs. | 50-foot boom at 12-foot radius | |

KOEHRING

**STRAIGHTEN PILING** . . . Continued from page 133

PILES in street, to which sheeting is tied back, are encased in timber curb that separates traffic, but causes no other inconvenience.

part wire rope were then rigged up between tops of these piles in the street and wale sections at top of the crumpled sheeting. The running line from each tackle set was reeved up to a heavy winch on a truck. Then, by careful manipulation of the winches, the sheeting was slowly pulled back into original position without a sheet jumping an interlock. The scheme worked perfectly.

The sheeting was then tied back to the piles by cables set just below pavement base, and the street was repaved. Backfill was completed between soldier beams and sheeting, which permitted replacement of the sidewalk. Tops of piling in the street were encased in a continuous timber curb that separates traffic, but causes no other inconvenience.

Mile High Center, a creation of Webb and Knapp, Inc., and designed by I. N. Tei, is Denver's first new office building in years. It will be fully air conditioned. Kahn and Jacobs are associate architects, along with I. N. Tei and G. Meredith Musick.

George A. Fuller Co. has an interest in the project, as well as being general contractor. Matthew Grogan, vice-president, is in charge of construction and John G. Layter and Henry E. Sexton are construction manager and general superintendent, respectively. Hutcheson Construction Co., Denver, was subcontractor on general lot excavation.


# Parmanco

**Latest in design . . . HI-SPEED**

# HORIZONTAL DRILL

***Drills a 6-inch hole in two-thirds the ordinary time***

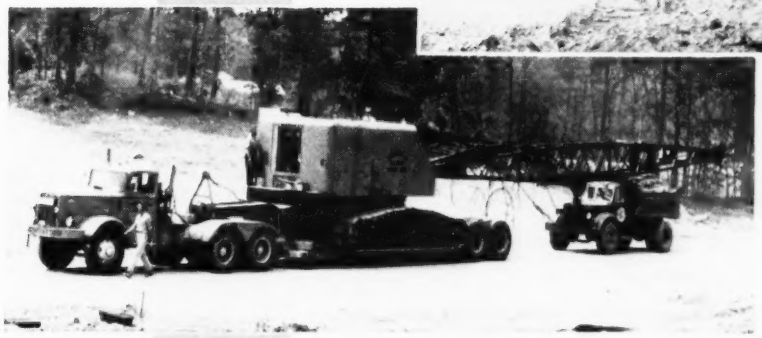
**Completely re-designed around a 40 h.p. engine**

The HI-SPEED DRILL is designed for drilling 5-6-8 inch holes to 100 feet or more. The 40 h.p. engine with four drilling speeds makes possible the reduction of footage time by one third. This new drill, the very latest in design, is equipped with self-starter and generator, dual type front wheels, truck type rear axle with hydraulic brakes and traction drive with both forward and reverse. Here is greater speed in retrieving augers and four rotating speeds and reverse for drilling and cleaning the hole. Here is accuracy and mobility. Here is the modern answer to faster, lower-cost drilling. *Send for Complete Details.*

**NOTE:** Auger rack a Parmanco feature which saves on drilling time. Augers always handy on machine as it is moved from hole to hole. Four individually adjustable leveling jacks for faster set up and smoother drilling.

**PARIS MANUFACTURING CO.** PARIS, ILLINOIS

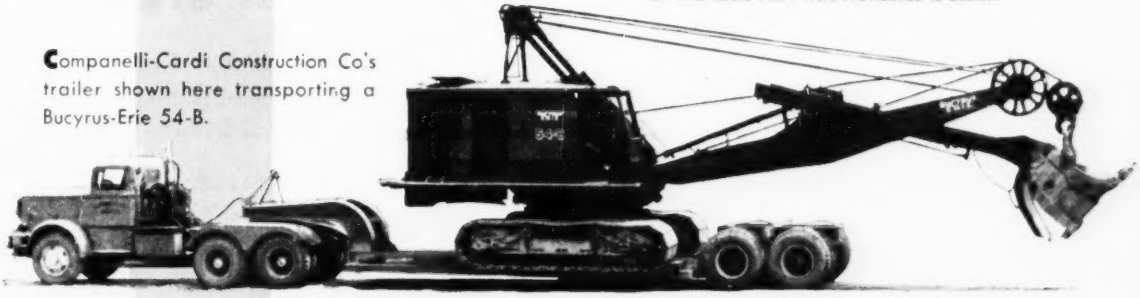
# the TALBERT way is the easy way



Talbert model TD-75-RG-RA, owned by Companelli-Cardi Construction Co. of Hillsgrove, R. I., is shown hauling a Link Belt K-595.

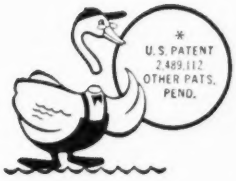
The Project: Road Construction on U.S. Route No. 1 from Providence to Boston.

Companelli-Cardi Construction Co's trailer shown here transporting a Bucyrus-Erie 54-B.



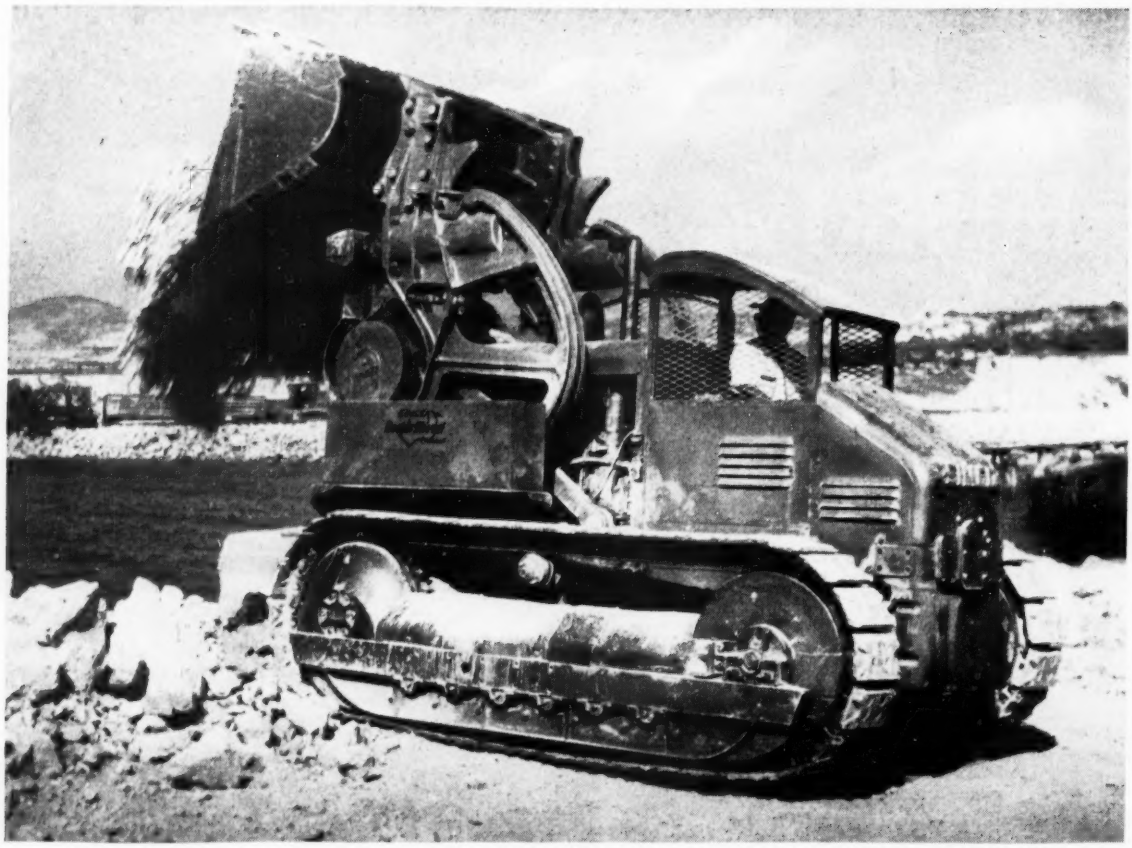
. . . nearly anything which needs to be moved, can be profitably hauled on a Talbert Trailer. Talbert Removable Gooseneck Trailers are adaptable to many specialized hauling jobs—find out how Talbert Trailers can work for you.

**WRITE FOR NEW TALBERT CATALOG No. 104**




**THE TALBERT CONSTRUCTION EQUIPMENT CO., of Lyons, Illinois**
**manufactures a complete line of low-bed trailers and dump semi-trailers**

**THE TALBERT-WAY IS THE EASY WAY**



**Big size, bigger power, torque converter and finger-tip controls mark . . .**

# Eimco Rocker Shovel Built on Integral Crawlers

Another Equipment Development Report
By HAROLD W. RICHARDSON, Editor

BRAND NEW from stem to stern is the 1½-yd Eimco Tractor Loader. Only the basic operating principles of front-end loading and rocker overhead rear discharge have been carried over from the older Model 104. Otherwise the 105 is a new rig throughout—heavier, larger capacity, finger-tip hydraulic controls without manual clutches or brakes, two-speed torque converter drive forward and reverse, two-speed hoisting and dumping and independent power steering on both tracks.

It is a completely integrated machine, mounted on a rugged tractor designed and built specially by Eimco for heavy-duty loading conditions, with engine in rear and operator up front, all in contrast to the old 104, which was adapted to a modified Caterpillar D4 tractor.

For you who have not seen an Eimco Rocker Shovel, made by the Eimco Corp., Salt Lake City, Utah, it is essentially a crawler-mounted front-end loader and excavator that can dig to 17 in. below track level. Digging and loading crowd is by the powerful rocker-arm action and machine's forward travel. The bucket is attached to two torque-multiplying rocker cams, one on either side, inside the crawler tracks, riding rails attached to the load-carrying main frame.

For raising the bucket to carry position and thence back for overhead discharge at rear of machine, the cams are pulled back by a pair of flat chains operated by a double-reel chain hoist at the rear. The bucket returns to digging and loading position by gravity.

• **A combination of torque converter drive,** constant-mesh gear trains and hydraulic control clutches, all in the unit transmission at the front of the machine, gives the 105 shovel some unusual operating characteristics.

There is a handy two-speed travel forward and reverse, with instant speed changes under full power and changes of direction under full speed possible without use of clutch pedals, gear shift levers or brakes, accomplished by moving small hydraulic control levers; and independent power application to each crawler track, so that either one can be instantly put into neu-

*(Continued on page 141)*

## Oklahoma Contractors' Report:

# No Equipment Failure...
# No Loss of time...
# IN FIVE YEARS!

J. & H. Clark, Earth Moving Contractors in Perry, Oklahoma boast a record that any earth-moving man would be proud of . . . NO LOST TIME IN FIVE YEARS!

The Clark Brothers keep all their equipment on all their many jobs (example above) in constant operation. They write:

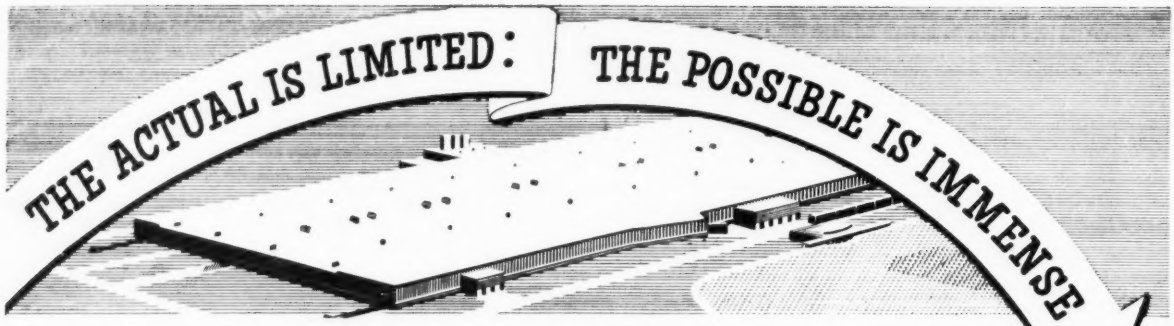
"We've been using Cities Service Products for the past five years, and have never had an equipment failure. What's more, our equipment is put to harder use than average equipment. We've moved as high as 4.2 yards a minute!

"Thanks to the fine Cities Service Products, we have had no loss of time. We use Cities Service Trojan Greases on our hydraulic equipment, Cities Service C-300 Oils on our diesel equipment, and Cities Service C-800 Oils on our gasolene equipment."

WHY NOT FIND OUT HOW THE COMPLETE LINE OF CITIES SERVICE FUELS AND LUBRICANTS CAN SAVE YOU TIME AND MONEY, STEP UP PRODUCTION? Call your nearest Cities Service office or write Cities Service Oil Company, Dept. K6, Sixty Wall Tower, New York City 5, N. Y.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS




NEW LINCOLN PLANT CREATED BY INCENTIVE-INSPIRED CO-ACTION IN DEVELOPING POSSIBILITIES IN PRODUCT

© LE Co. 1952

## WELDING ADAPTED TO 420' TEMPORARY STEEL TRESTLE COMPLETES RIVER CROSSING IN 2 MONTHS

TAKING advantage of the ability of arc welding to speed construction, engineers of this Class I Road replaced a washed out truss bridge using standard rolled sections with plate stiffeners and braces welded in place.

**Fig. 3. Temporary Steel Trestle** *built by The Erie Railroad at its Chemung River Crossing has 14 spans which vary from 24' to 36' center to center of bents. Spans are supported on double 3 pile bents.*

## WELDED REPAIRS SPEED MAINTENANCE SAVE STEEL ON REINFORCING VIADUCT

**Fig. 1. 818 Foot Long Viaduct** *of Erie Railroad across Genesee River at Portage, New York, is reinforced by addition of cover plates arc welded to the inside face of tower columns. Original lattice bars were removed on inside face of columns and the additional plate fillet welded to outstanding legs of tower angles. Plug welds are used in the open holes in tower angles. Welding is done with Lincoln "Fleetweld 5".*

**Fig. 2. Welding End Batten Plates** *after new strut is assembled to column. Entire job required only 27.5 tons of steel, was finished in less time with arc welding than possible otherwise.*

SPEEDS CONSTRUCTION

*Studies in Structural Arc Welding available upon request on your letterhead. Write to*

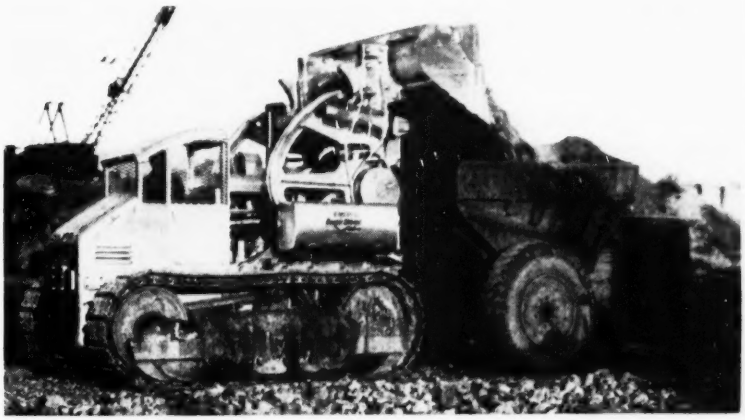
**THE LINCOLN ELECTRIC COMPANY**

**DEPT. 2706, CLEVELAND 17, OHIO**

**THE WORLD'S LARGEST MANUFACTURER OF ARC WELDING EQUIPMENT**

ROCKER SHOVEL . . . Continued from page 138

NEW EIMCO 105 ROCKER SHOVEL takes dry or sloppy materials in stride. It's an excavator, too, that digs to 17 in. below grade. Operator is well protected, yet has all-around vision from his front-end seat.



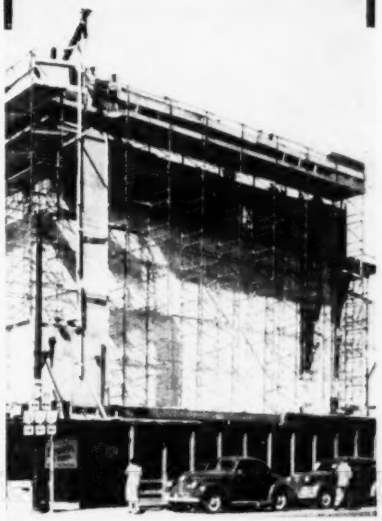
EIMCO's 105 Rocker Shovel is a big, husky rig. Note comparison with Koehring Dumptor which it is loading. Machine weighs 17 tons. Oscillating tracks give full ground contact.

tral, forward or reverse travel. The machine can be spun around in its own length by reversing one track while the other is traveling full speed ahead. All this is done with finger-touch hydraulic controls.

• **Here's how the drive mechanism works:** A General Motors 3080 diesel engine (other engines available if desired) is located behind mid-center of the machine. The main drive passes forward through a torque converter to a two-speed reversing clutch and constant-mesh gear train in a transmission case at front. The front transmission unit contains all of the gearing and clutches for speed changing and reversal of each track.

The oil-cooled, positive-engage-

YOU CAN COUNT ON BIL-JAX to solve ALL your SCAFFOLDING PROBLEMS!



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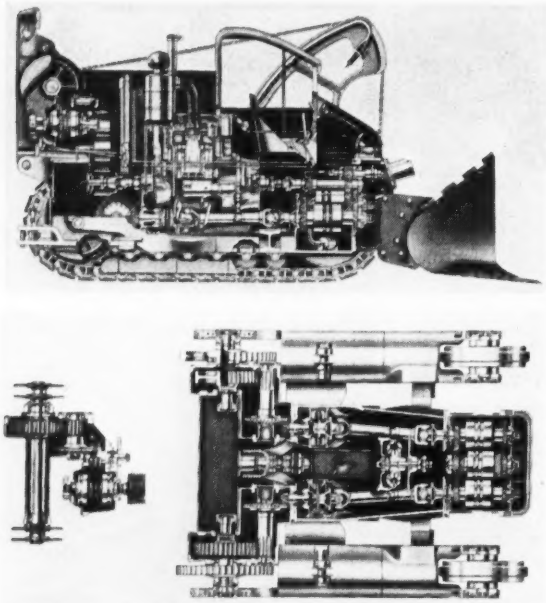
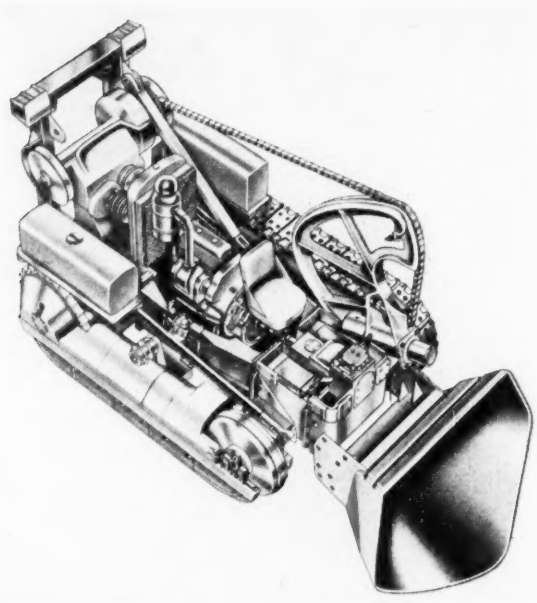


DRIVE MECHANISM indicated by sectional drawings. From engine, main drive passes through torque converter to two-speed, reversing constant-mesh transmission in case at front end. Drive to each track is carried back from transmission to final drive gear boxes at each side. Track drives are independent of each other; either can be put into forward or reverse travel or locked in neutral at will of operator. Rear extension of engine shaft drives double-reel bucket hoist through V-belts.



ARRANGEMENT OF LOADER ELEMENTS shown by cutaway drawing. Engine is back of mid center. Operator sits well forward, above torque converter. Double chain reel for raising bucket to dump position is mounted high at rear. It is V-belt driven off rear engine shaft extension that also serves as power takeoff.

*(Continued on page 144)*


# Save Costs!

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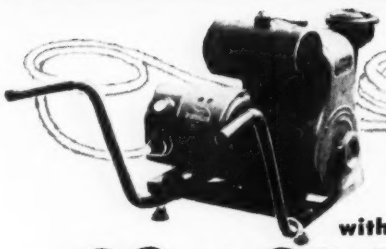
**in any FORM... Get BETTER RESULTS**



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with **HI-LECTRIC**

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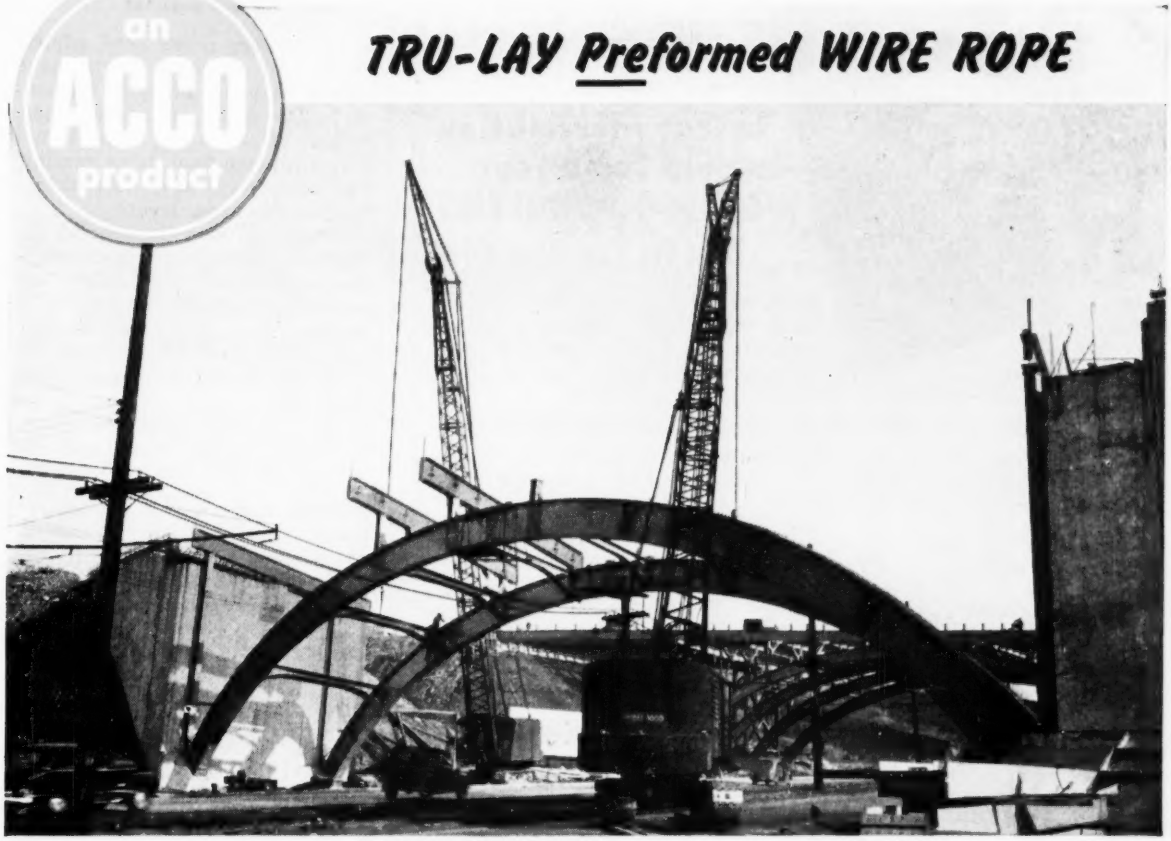

## Should Boom and Hoist Lines Be the Same Construction?

• Yes, if you use a tag line. No, if no tag line. Maybe you, like some other contractors, are still using 6 x 25 filler wire construction for the hoist line without a tag line and are having trouble with spinning. It's pretty common practice.

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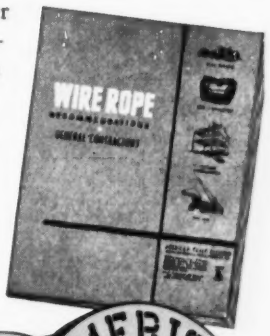
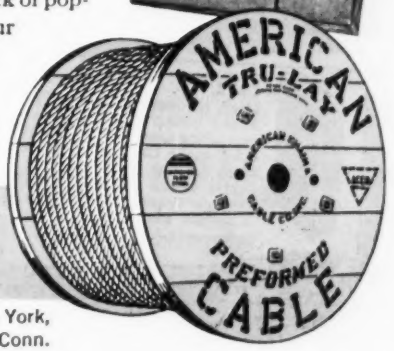
See your nearby AMERICAN CABLE distributor who carries a stock of popular TRU-LAY Preformed GREEN STRAND Wire Ropes. Or write our Wilkes-Barre, Pa., office for a copy of No. 128-B "Wire Rope Recommendations for General Contractors." It will save you money.

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**SERVICISED PRODUCTS CORP.**

6051 W. 65TH STREET • CHICAGO 38, ILLINOIS


**ROCKER SHOVEL**

. . . Continued from page 142

ment clutches never need adjustment. All wearing parts have sealed oil batch pressure lubrication. Two shafts, one on each side, extend aft from the front transmission to the final drive gearing. The final drives have no clutches, brake-bands and levers.

Extending from the rear of the engine is a direct-drive shaft carrying a multiple V-belt pulley and serving as rear power take-off if desired. The pulley drives two-speed twin chain reels through V-belts that hoist the bucket from digging to dumping position. Bucket drive clutches and speed changer are hydraulic controlled, and also never require adjustment.

• **Track and crawler assembly**—Eimco designed and built—is heavy-duty construction with all-steel castings and weldments. Tracks are full oscillating, mounted on a heavy cast alloy steel equalizer bar, stiffened by massive alloy steel diagonal braces. Solid-web front idlers and one-piece track rollers are of Utaloy SY alloy cast steel, all carried on roller bearings and oversize hardened alloy shafts. Track rollers, idlers and sprockets are protected by lapped face seals. Track shoes and links are also heat-treated alloy steel.

• **The operator sits well up front** in an inclosed well-protected cab where he has full visibility of his work. There are only two levers for all the track travel control, forward and reverse and turns. A third hand lever selects the speed, and engine throttling is by foot pedal or hand control. Another hand lever regulates bucket motions, with a separate speed selector.

The two-speed bucket hoist can be shifted without shock, even during hoisting. Hoist power is cut off when the bucket strikes the backstop, but the operator can hold the bucket in dumping position, can shake it to loosen sticky material, and can return it to digging position at will. Also, the bucket can be caught and held at any position, going up or down, loaded or empty.

• **Model 105 can be equipped** with a bulldozer blade or with a 2½-yd snow bucket. There are three variations in low, standard and high bucket discharge and overhead clearances. The low-clearance model carries a 1¼-yd bucket. Digging depth and discharge height

can be changed somewhat by shifting the relation of bucket to rocker frames. Complete specifications are given in the accompanying table.

Eimco president Joseph Rosenblatt, chief engineer Dan Schwartz and their associates set out two years ago to create a wholly new excavator and loader—and they have succeeded with their Model 105.

## Eimco Model 105 Specifications

**DIMENSIONS**

| | |
|---|---|
| Headroom clearance: High disch. | 16 ft 6 in. |
| Std disch. | 14 ft 5 in. |
| Low disch. | 12 ft 0 in. |
| Discharge height: High | 11 ft 4 in. |
| Std | 8 ft 3 in. |
| Low | 7 ft 3 in. |
| Over-all length (bucket down): High | 17 ft 6 in. |
| Std | 16 ft 6 in. |
| Low | 15 ft 2 in. |
| Over-all height (bucket down): High | 9 ft 6 in. |
| Std | 8 ft 6 in. |
| Low | 8 ft 6 in. |
| Over-all width | 7 ft 8 in. |
| Min. length (bucket in carry position | 11 ft 9 in. |
| Weight (with bucket) | 34,000 lb |

**BUCKET**

| | |
|---|---|
| Standard | 1½ cu yd |
| Snow | 2½ cu yd |
| Low discharge | 1¼ cu yd |
| Min. cycle-hoist, dump and ret | 10 sec |

**TRACKS**

| | |
|---|---|
| Track gage | 74 in. |
| Length on ground | 95 in. |
| Shoe width (standard) | 16 in. |
| (Maximum tractor only) | 30 in. |
| Area ground contact (std) | 3,040 sq in. |

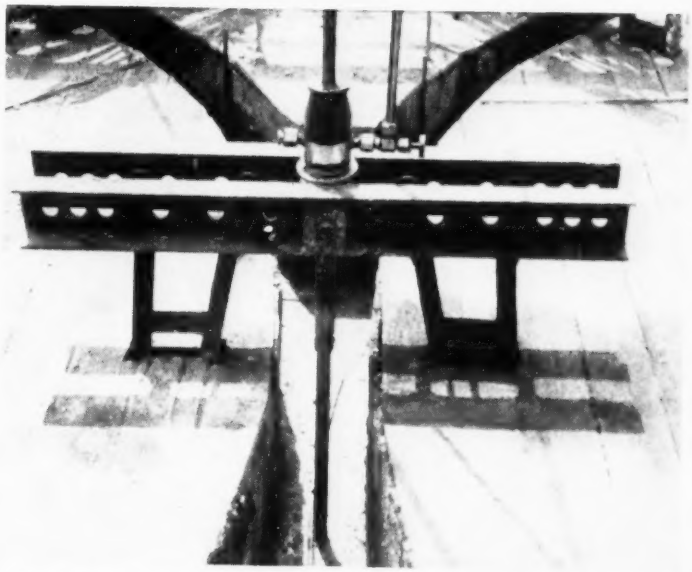
**POWER**

| | |
|---|---|
| Engine—GM 3 cylinder diesel 3080 | |
| Belt hp | 90 |
| Max drawbar pull (with grousers and sufficient wt.) | 40,000 lb |
| Drawbar pull (std equipment, flat shoes) | 20,400 lb |
| Travel speed — low gear (forward and reverse) | 0—2.0 mph |
| Travel speed — high gear (forward and reverse) | 0—5.0 mph |
| Starting system—electric | |
| Eng. rpm at max torque | 1,200 |
| Eng. rpm governed at full load | 1,800 |

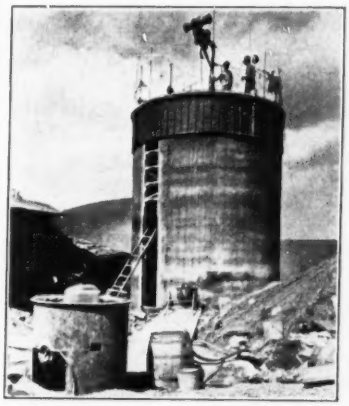
**MISCELLANEOUS**

| | |
|---|---|
| Digging depth below grade | 17 in. |
| Ground clearance | 12 in. |
| Fuel capacity | 45 gal |


SLIPFORM CONSTRUCTION
*with*
"CONCRETOR"
HYDRAULIC JACK



SYNCHRONIZED JACKING
CONTROLLED
CENTRALLY OR INDIVIDUALLY



Silo in process of erection with typical "CONCRETOR" Slipform standard machine. Machines can be purchased or rented.

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# 22 HEILINERS

NEW JERSEY

## SPEED EARTHMOVING ON THE GARDEN STATE PARKWAY

BIG earthmoving jobs like the $300,000,000 Garden State Parkway, and big-producing Heiliners just naturally go together. Heiliners combine all the advantages of fast loading, big capacity, plenty of power, high speed, and "tilting floor" positive forced ejection (the simplest and most efficient known!) with a host of other features that pay off in profit on any job.

- **8 HEILINERS for GEORGE M. BREWSTER & SON, INC.** of Bogota, N.J. are operating near Red Bank, N.J., moving over a million yards of sandy clay loam at a rate of 225-cu. yds. per hour per machine. Loading time per unit averages 45 seconds in 60 ft. and the 1200-ft. round trip time average is 3 to 3½ minutes.
- **5 HEILINERS for CONSTRUCTION AGGREGATES CORP.** of New York are moving 112-cu. yds. of sand per hour per unit on the section of the Garden State Parkway south of Morganville. Loading time averages 40 to 65 seconds in 200 ft., and average cycle time for the 8400-ft. round trip is 8 minutes.
- **4 HEILINERS for FRANK STAMATO & CO.,** of Lodi, N.J., are working near Eatontown and in Ocean County where the contractor had to meet a variety of tough conditions ranging from very wet to dry sand and gravel.
- **3 HEILINERS for J. F. CHAPMAN & SON** of Hillside, N.J., have contracts for grading, draining and structures near the north end of the Parkway working in material ranging from rock and shale to sand and gravel.
- **2 HEILINERS for REID CONTRACTING CO.** of Woodbridge, N.J., are operating near Toms River, and have a lot of tough conditions to meet such as a high water table, sand and gravel with clay and new haul roads.

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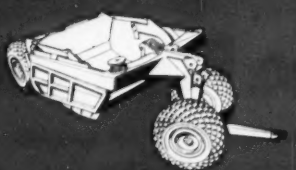
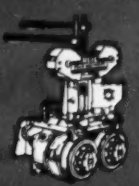
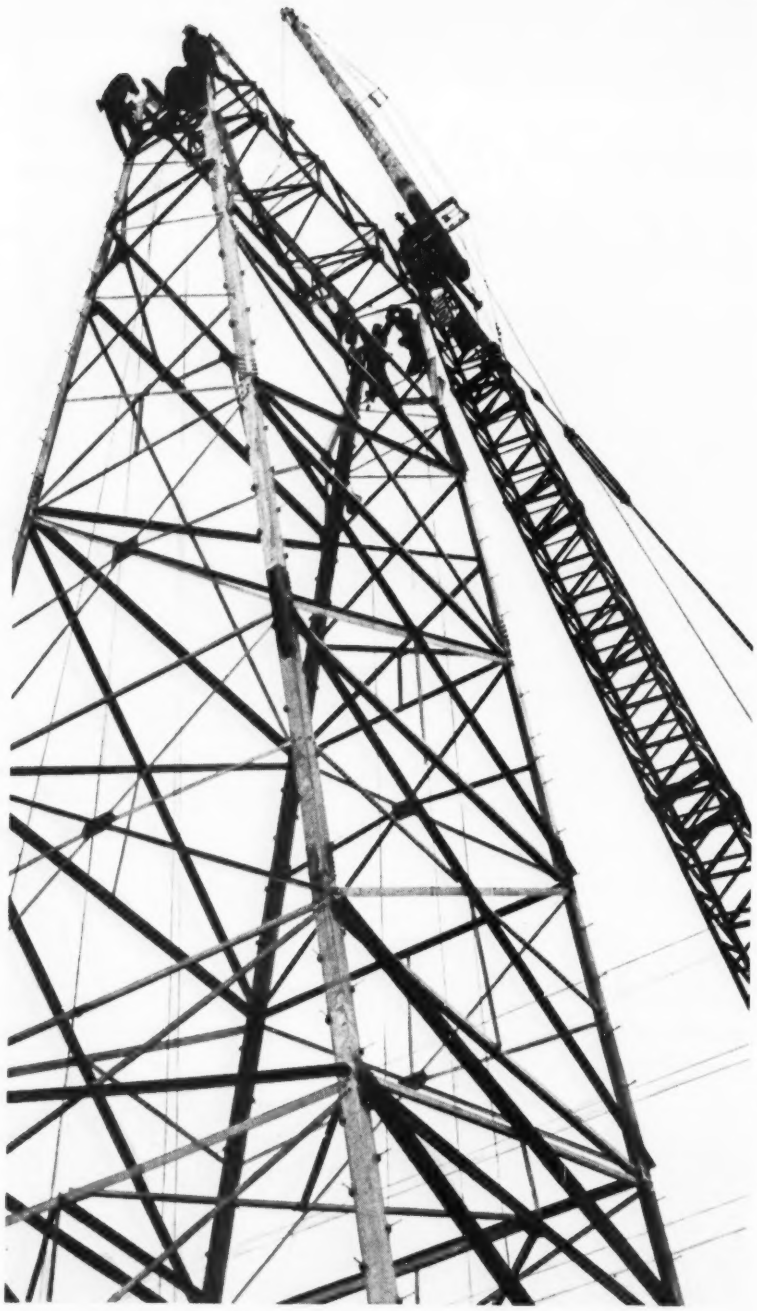




33 and 16-yd. Hollaver Scrapers  20-yd. Hollaver Bottom Dump Wagon  6, 9, 11 and 16-yd. Trailer Dozer Scrapers  Cable Power Control Units



CEDAR POWER LINE POLE is rigged to the tip of a 100-ft boom on a Bay City crane to lift prefabricated steel sections to the top of a 145-ft highline tower near Philadelphia. Tower was built alongside railroad tracks and power lines; crane work had to be precise.

# Erect High Towers Over Busy Railroad

HIGHER TOWERS for a highline carrying Philadelphia Electric power were completed recently in Manayunk, Pa., to make way for the Schuylkill Expressway, an important feeder artery for the Pennsylvania Turnpike.

Relocation of two 66,000-v circuits—which had been carried along the main line of Reading Railroad—meant that two towers had to be overbuilds, to straddle four tracks. One standard line tower had to be higher than its neighbors for ample railroad and highway clearance.

Contractor Henkels & McCoy, of Philadelphia, had to allow for lack of space on the construction site for large-scale steel assembly and for almost constant interruptions on the overbuilds due to priority given most trains on the Reading rails. High winds also conspired at times to make placing of large prefabricated sections of tower steel extra difficult.

### Wood Boom Extension

The standard steel tower was constructed entirely alongside the tracks and presented only a hoisting problem due to its height of 145 ft, which called for an extended crane boom. The contractor's men rigged a 50-ft cedar power line pole to the tip of the 100-ft boom on their Bay City crane for an extension, and the upper sections of the steel tower were placed easily. This tower weighs 38 tons.

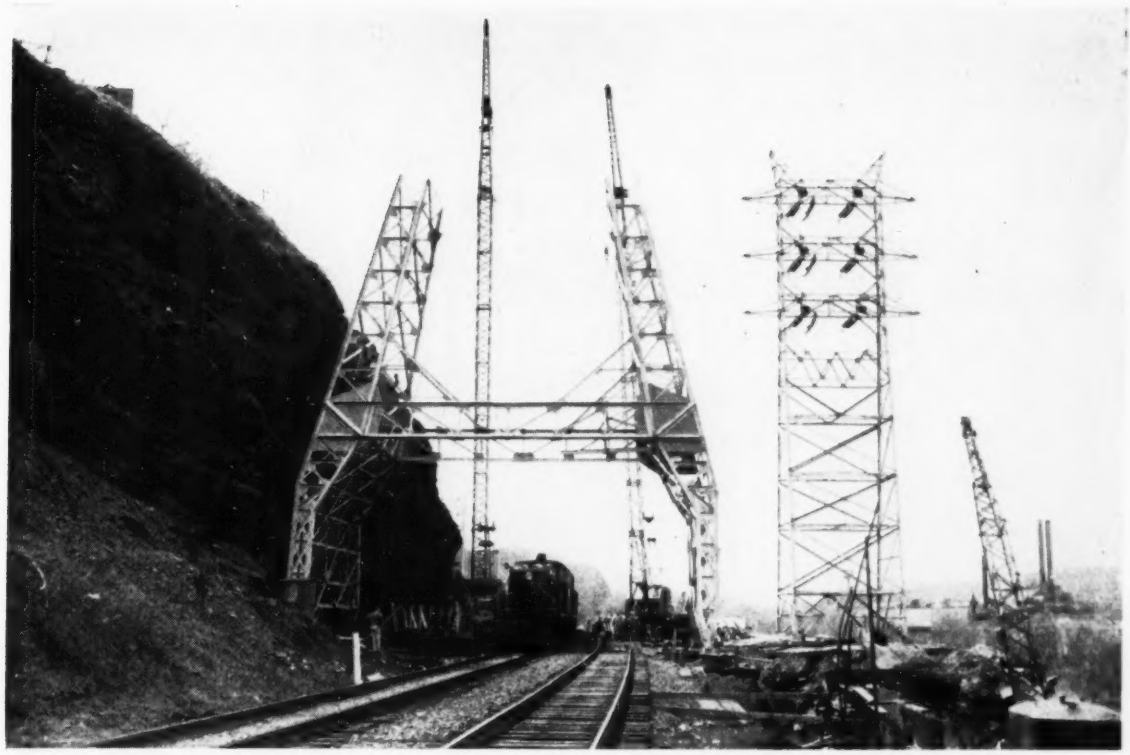
Two towers had to span the railroad, necessitating structures spanning 65 ft. The larger one is 143 ft high, weighs about 115 tons. The smaller one rises 99 ft, has 80 tons of steel.

Tower sections were prefabricated in Philadelphia Electric's storage yard and hauled to site on lowboys. Size of prefabrications was limited by what the trucks could handle on the highways. Bethlehem Steel Co. manufactured the component parts.

Whenever one of the big bridging sections was being hoisted (by two cranes side-by-side across the tracks), all rail traffic was halted for 3 or 4 hr until the steel had been placed and bolted.

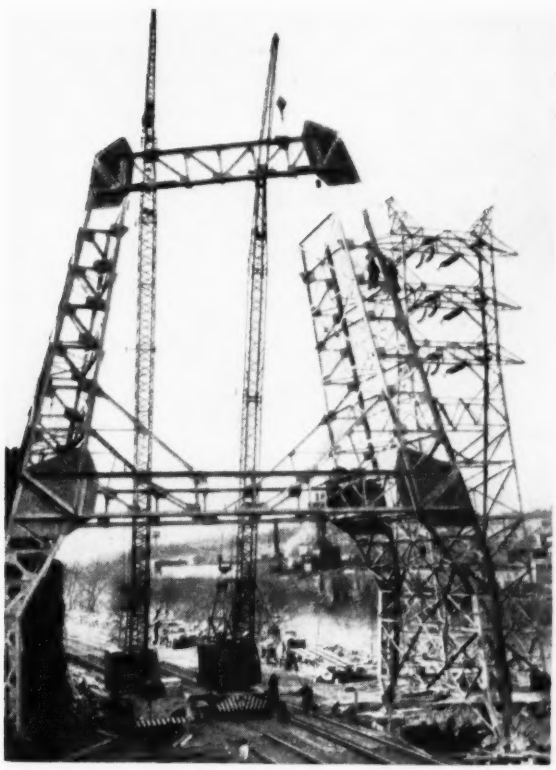
All towers are of bolted construction, with bolts drawn tight by electric impact wrenches powered by a portable generator. The larger overbuild consumed more than 20,000 bolts.

Arthur Faust, a Henkels & McCoy partner, supervised for the contractor.



**TRACK IS CLEARED** to pass train, but two cranes and men are ready to begin placing heavy prefabricated bridge section of largest overbuild. High-tension lines at right were transferred to new towers upon completion with little interruption in service.

*(More photos on page 151)*



**RAIL TRAFFIC IS HALTED** as Bay City and Link-Belt Speeder cranes team up to spot big steel section some 80 ft above the tracks. High winds sometimes made such high balancing operations impossible.

**CRANES HOLD STEADY** as steel workers slip bolts through matching holes. Bolted construction is used throughout. Workers here are entirely safe, have safety belts tied to existing structure.

# are you using hardfacing effectively ?

**BE SURE—READ AMSCO'S NEW CATALOG ON HARDFACING ALLOYS**

Whatever the application, whenever you are in doubt about what hardfacing alloy to use, you can reach for the new Amsco Catalog for the answer. It gives you complete analyses, metallurgical information, and other pertinent data about Amsco's line of automatic and manual hardfacing alloys. You can look up the right rod to use for hundreds of the more common applications. And for those extra tough jobs, you'll find the section on How to Select a Hardfacing Alloy indispensable. Although it's written by welding engineers, this new catalog is easy to understand and to apply its suggestions to your own operations.

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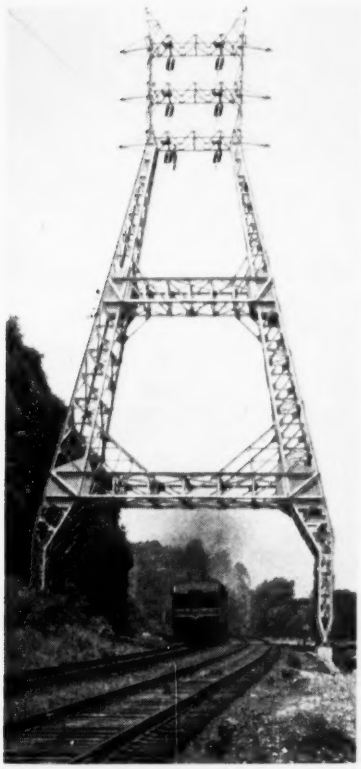
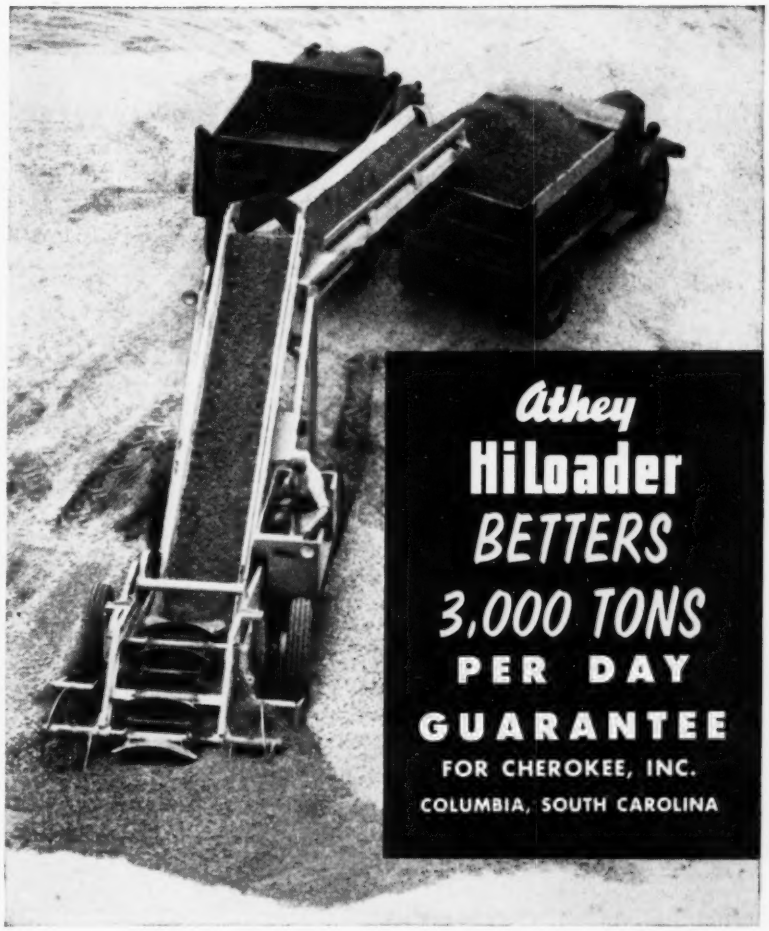
**HIGH TOWERS . . .** Cont'd from P. 149

MAIN COLUMN ANGLE on overbuild is checked with a plumb line and temporary push braces then adjusted to align vertical structure to receive horizontal bridging. Tower leg pivots on hinge at its base.

*(More photos on page 153)*



COMPLETED OVERBUILD frames diesel freight rounding the bend, now carries 66,000-v power line. Tower is 143 ft high, spans 65 ft, weighs approximately 115 tons.


With 115,000 tons of crushed slag to load from stockpile, Cherokee, Inc., contractors on the Charleston Air Base, carefully considered all types of loading equipment—*then picked an Athey HiLoader.* The project required 3000 tons of the 4" minus material each 10-hour day—and the HiLoader met the schedule easily, *loading as many as 458 tons in an hour.*

J. M. JORDAN, president of the Columbia, South Carolina, firm, reports, *"We are well pleased with our Athey 125 HiLoader. It has more than lived up to our expectations in loading out the stockpiled slag. We recommend the HiLoader to anyone with aggregate to move."*

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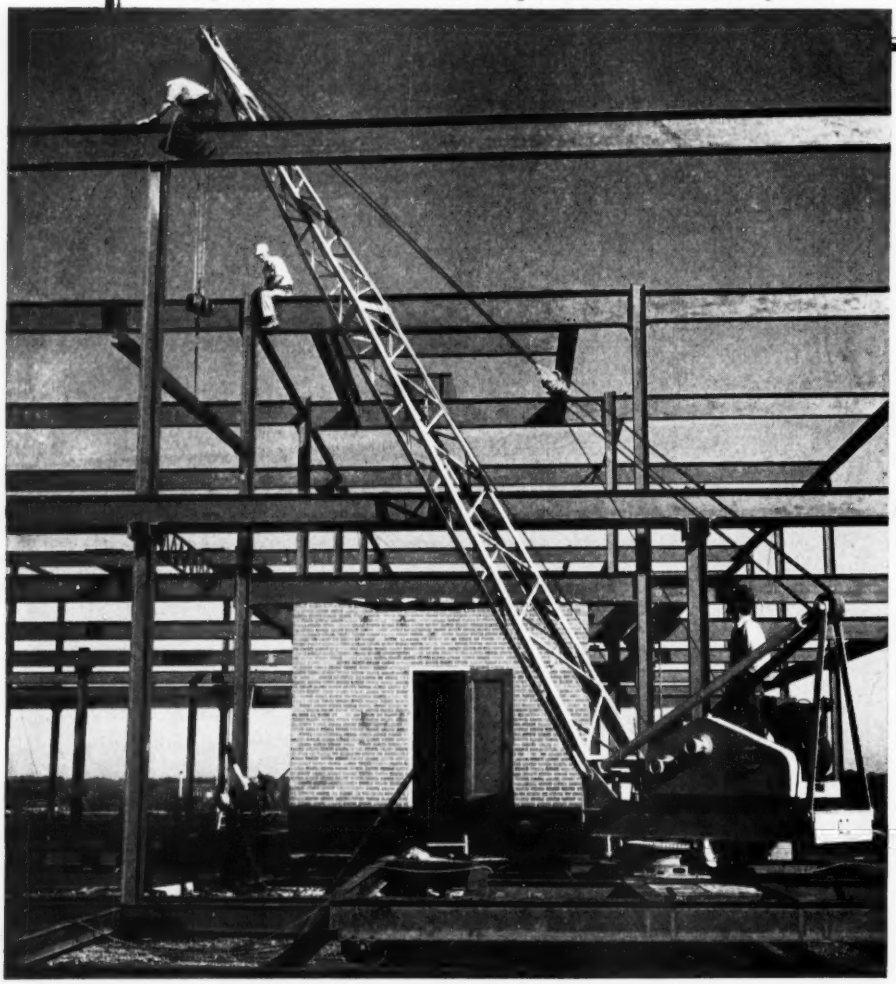
# Handle loads safely and economically with a Clyde W-3 WHIRLETTE

**SPECIFICATIONS**
Hook Work Only — Not For Clam Shell

| CAPACITY AT | 10' Radius | 15' Radius | 20' Radius | 25' Radius | 35' Radius | 40' Radius |
|---|---|---|---|---|---|---|
| | 10,000 lbs. (Special Tackle) | 6500 lbs. | 4500 lbs. | 3500 lbs. | 2500 lbs. | 2000 lbs. |

HOIST LINE SPEEDS— 50 f.p.m. to 160 f.p.m. Hoist line pull 3000 pounds. BOOM LENGTHS, 20 feet, 30 feet, or 40 feet. LOAD TACKLE, 3 parts for capacities to 8,000 pounds. HANGER TACKLE, 7 part. Roller path, 36 inch diameter. TAIL SWING, 5 feet 6 inches with 2-drum hoist and swinger. Required counterweight, 1,250 pounds steel punchings.

The complete unit includes turntable, center pin and rollers, rotating platform with counterweight box, A-frame and back-legs, power unit with or without swinger, tackle blocks and operating cables.



**FULL REVOLVING STEEL DERRICK**

•

**ONE FOUNDATION**

•

**NO GUY WIRES OR STIFF LEGS**

•

**OCCUPIES LITTLE GROUND SPACE**

•

**OPERATOR ALWAYS FACES LOAD**

•

**GASOLINE OR ELECTRIC POWER**

•

**MANUAL OR POWER SWING**

•

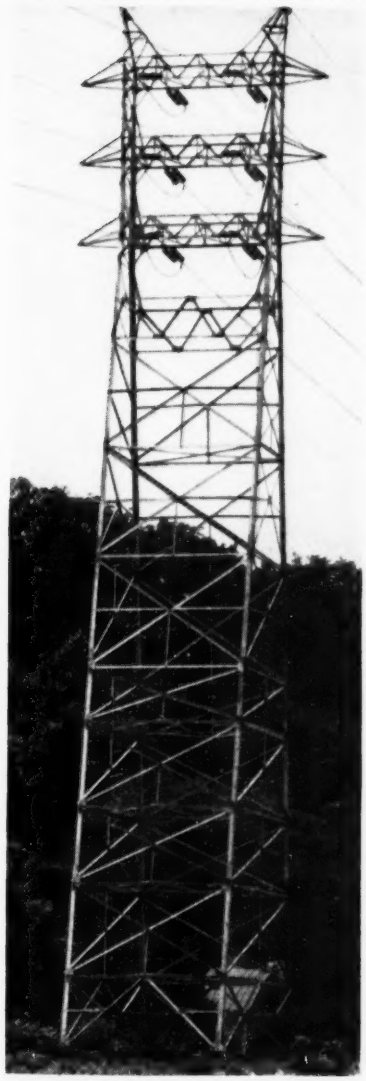
**PORTABLE OR STATIONARY MOUNTING**

**CLYDE IRON WORKS, INC.** Established 1899 **DULUTH, MINNESOTA**

SUBSIDIARY OF BARIUM STEEL CORP.

HOISTS · DERRICKS · WHIRLEYS · BUILDERS TOWERS
CAR PULLERS · HANDI CRANES · ROLLERS

HIGH TOWERS . . . Cont'd from P. 151



STANDARD TOWER was erected aside of the tracks and used lighter components. It weighs about 38 tons, is 145 ft high. All towers are of bolted construction.

# Want to locate a truck?

**Find it FAST . . . with RCA 2-Way Radio**

**—says Irvin R. Worthington Burlington County (N. J.), Road Supervisor**

"Our 11 trucks are on the go most of the time," says Mr. Worthington. "But with radio I can contact any of them on a moment's notice.

"We cover 500 highway miles in good weather or bad, and each truck is on call every minute of the day. In any emergency—in case of breakdowns—drivers report in by radio, and we change dispatching instructions without a minute's delay."

• • •

"To figure savings," says Mr. Worthington, "I just total the number of times we've rerouted an extra batch of concrete, eliminated cruising between jobs, gotten emergency crews out in a hurry—and I estimate we've increased our efficiency 50%."

**Do It BEST with RCA 2-Way Radio.** EASY TO USE as your telephone • COMPACT—takes no more space than a spare tire • TOUGH—constructed to take rough field conditions • RELIABLE—engineered by the leaders in electronics • PRACTICAL—installation and maintenance available from RCA Service Company.

**FOR INFORMATION MAIL COUPON NOW**

Communications Division, Radio Corporation of America
Dept. 20-W, Building 15-1, Camden, N. J.
☐ Please send me information on RCA 2-Way Radio
☐ Please have a representative call on me

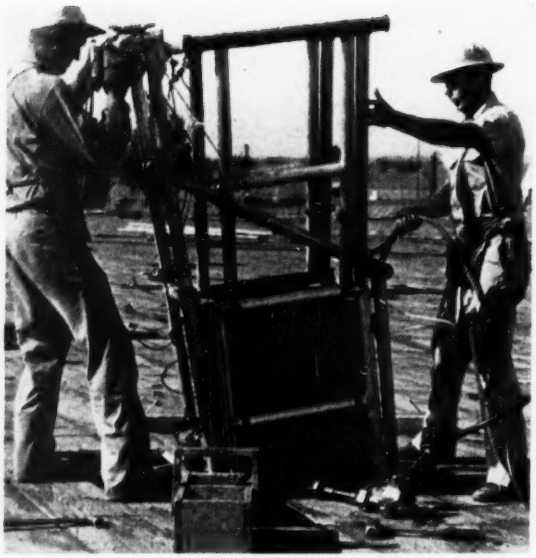
Name_____ Title_____

Company_____ Address_____

City_____ Zone____ State_____

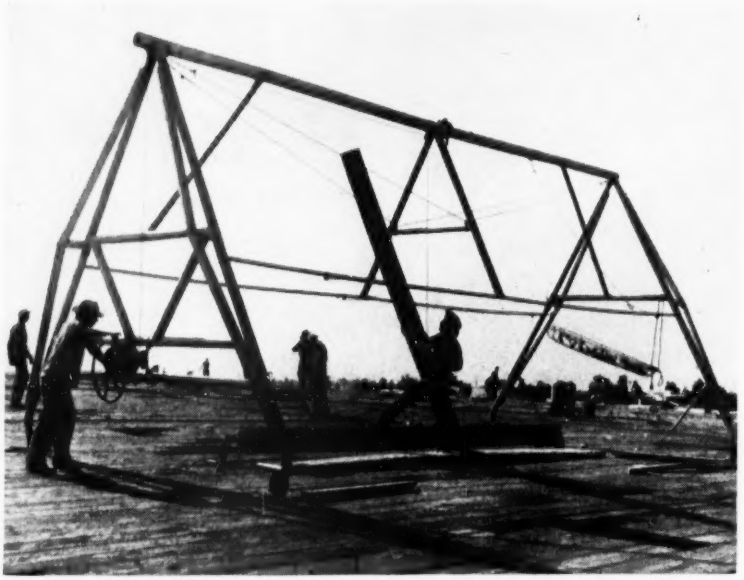
RCA® **RADIO CORPORATION of AMERICA**
**COMMUNICATIONS EQUIPMENT** **CAMDEN, N. J.**

NAILERS RIDE SCOOTERS on low wheels as they roll across 5-acre tank roof refastening old sheathing and repairing worn-out sections. Three reservoirs required more than 7 tons of nails.



PORTABLE AND FOLDABLE SCAFFOLD is lowered through roof opening for use by men who install angle braces at posts to support beams. Roof being replaced was put on reservoirs in 1912.

# Special Tools Cover 15-Acre Roof Quickly



ALUMINUM PIPE A-FRAME, job-designed and welded, was primarily a safety device kept on the ready in case anyone broke through the old roof and a large area had to be straddled. But it was used to replace heavy beams underneath.

FIFTEEN ACRES OF ROOF take a lot of covering. But the construction crew at the Kern River plant of the Standard Oil Co. of California did just that recently when it re-covered three huge underground storage reservoirs.

Three earthen pits each hold 500,000 gal of oil. They are 530 ft in dia, have an area of about 5 acres apiece. The low roofs, only several feet above the ground, were constructed in 1912. Recent work consisted of removing the old covering, replacing beams, rafters and sheathing, as necessary. Then a new covering was applied.

First was laid one ply of rosin sheathing paper, then three plies of roofing felt cemented with Petrolastic asphalt and overlaid with ½-in. gravel embedded in asphalt.

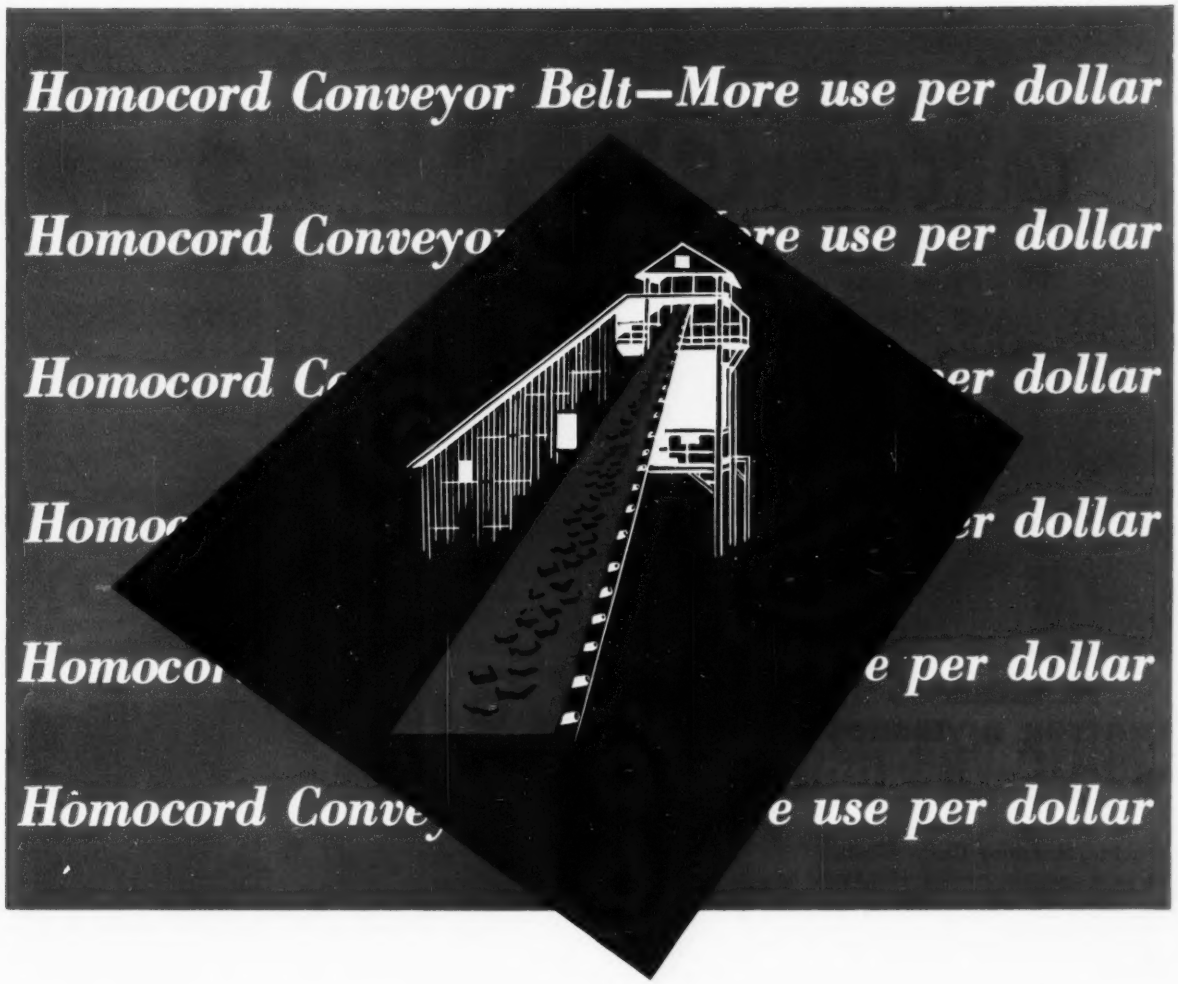
Repairs were made without serious mishap and the job completed in six months, with the aid of special equipment designed on the job and through a continuous emphasis on safety. Foremen held daily safety meetings.

A portable folding scaffold was lowered through holes cut into the roof sheathing to support men installing angle braces at each post to support beams. Sheathing was re-nailed by workers sitting on low 4-wheeled "scooters" as they moved across a roof.

Roofing paper was laid by a 2-wheeled cart carrying a roll and feeding it as one man pulled the machine along. A trough up front spread hot asphalt ahead of the roofing material. Another cart carried a hopper that spread gravel over the three plies of roofing felt. It too had a trough for applying hot asphalt ahead of the stone.

Hot asphalt was delivered to paper and gravel carts by buggies with tanks mounted high enough

*(Continued on page 156)*

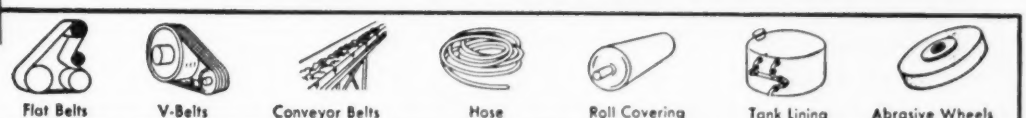

Homocord Conveyor Belt—More use per dollar
Homocord Conveyo re use per dollar
Homocord C er dollar
Homo r dollar
Homoco e per dollar
Homocord Conve e use per dollar

**CUSHIONED THROUGH AND THROUGH . . .** To take the impact of heavy loading. That's why you get more ton-miles of service out of Homocord Conveyor Belt. This resilience withstands the abrasion and gouging of jagged rock, coal and ore. Its flexibility makes it a naturally deep troughing belt that trains easily on the idlers . . . able to haul heaping loads without edge-wear or spilling. Another R/M Conveyor Belt, Ray-Man "F", is designed for underground mining where pulleys are small and great flexibility and tear resistance are needed. Both of these R/M belts give you long life on the job, MORE USE PER DOLLAR. Ask the R/M distributor for Bulletins 6906 and 6915. R/M field engineers back him up, to give you MORE USE PER DOLLAR—not only in conveyor belts, but in hose, transmission, and V-belts.

RM

MANHATTAN RUBBER DIVISION — PASSAIC, NEW JERSEY

**RAYBESTOS-MANHATTAN, INC.**

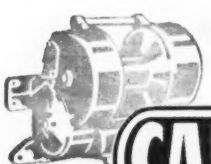



Other R/M products include: Industrial Rubber • Fan Belts • Radiator Hose • Brake Linings • Brake Blocks • Clutch Facings
Asbestos Textiles • Teflon Products • Packings • Sintered Metal Parts • Bowling Balls

USE A
CARCO
WINCH

TO INCREASE
TRACTOR DIVIDENDS

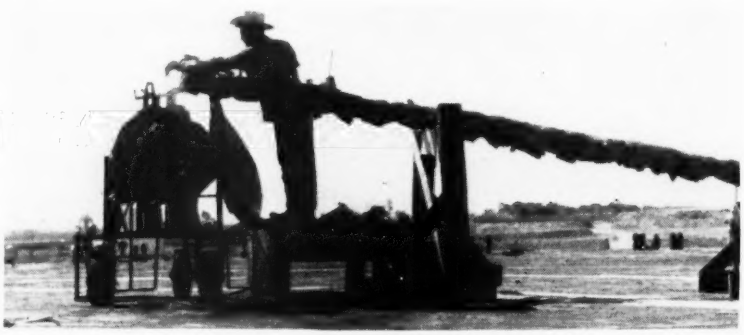
TRACTORS pay bigger dividends when equipped with Carco winches. Mounting Carco winches on your tractors, new or old, converts them to mobile pulling and towing rigs that are useful in many ways on heavy construction jobs. By doubling tractor pulling power and increasing tractor "reach," Carco winches pay off in towing heavy equipment, rescuing mired or ditched machinery, setting poles, pulling pipe, and other jobs that would tie up more costly and less mobile equipment. Or, with Carco multiple drum models, you can rig a mobile hoist, dragline, slackline or cableway in a jiffy. Most contractors want a Carco tractor winch on their construction jobs for general utility work. See your nearest Carco dealer. PACIFIC CAR AND FOUNDRY COMPANY, Renton, Washington. Branches at Portland, Ore., and Franklin Park, Ill.



WINCHES
For All Industrial Tractors
CARCO

PAPER LAYING CARTS like this one put down 6,700 rolls of sheathing paper and roofing felt. Trough across front of machine contains hot asphalt which is spread in front of paper as it unwinds and is rolled down to the roof deck. Fifteen acres were covered in 6 months.

GRAVEL CART spreads ½-in. crushed stone over the top of three plies of roofing felt cemented with Petrolastic asphalt. Gravel spreader also carries hot asphalt in tank up front, to apply coating ahead of stone. These carts handled 1,500 tons of crushed stone.



ASPHALT BUGGY is loaded at filling station in center of roof. Liquid material was brought to job by tank trucks, heated to 460 deg and pumped through the insulated line to fill delivery buggies. Fifteen-acre roof surface consumed 2,500 bbl of asphalt.

to permit the liquid to flow into the carts by gravity. Liquid asphalt was brought to the job by American Bitumuls & Asphalt Co. tank trucks, heated to 460 deg at the site. It then was pumped to the roof where buggies were loaded.

Materials consumed were 300,000 ft of lumber, 6,700 rolls of roofing material, 2,500 bbl of asphalt, 1,500 tons of crushed stone and 7 tons of nails.

# "Gradall worked more hours than any other machine on the job!"

**Mr. G. F. Howard**
*G. F. Howard Construction Company*
*Canfield, Ohio*

HERE'S what Mr. Howard told us, "Gradall gathers all the loose ends together on my construction jobs. On my Route 46 contract near Columbiana, Ohio, the Gradall worked more hours than any other machine on the job. Gradall has proved itself to be a real money-maker. Why I didn't buy one sooner, I'll never know!"

This is typical of the experiences of other Gradall owners from coast to coast. They report their Gradalls handling more and more jobs, putting in 1800 to 2000 on-the-job hours every year, doing short-run jobs profitably, eliminating hand labor.

The multi-purpose Gradall's fast attachment changes, mobility, and ¼" accuracy enable owners to bid on more jobs—to make bigger profits.

But prove it for yourself. Your nearest Gradall Distributor will be glad to give you a field demonstration on your own work—to show you how Gradall can make more money for you!

**Now one machine does all these jobs!**

- Trenching and backfilling
- Excavating
- Placing tanks, culverts, curbs, etc.
- Sloping and grading
- Ditch digging and cleaning
- Ripping and loading old pavement
- Hand labor finishing and clean-up

**Gradall Distributors in Over 75 Principal Cities in the United States and Canada**

Gradall
DIVISION OF WARNER & SWASEY Cleveland
PRECISION MACHINERY SINCE 1880

YOU CAN PRODUCE IT BETTER, FASTER, FOR LESS WITH WARNER & SWASEY MACHINE TOOLS, TEXTILE MACHINERY, CONSTRUCTION MACHINERY

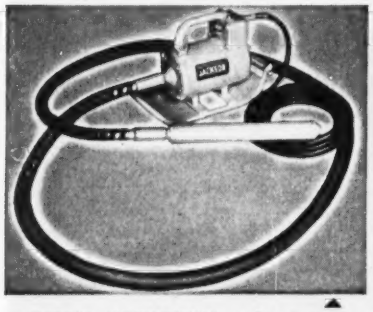
# 6 WAYS TO STEP UP RESULTS *and* PROFITS!

**MACADAM CONSTRUCTION**

In one pass the Jackson Multiple Compactor will compact 12" of rock to support smooth rollers. In 4 passes compaction to final density may be obtained. With 2 passes all voids from top to bottom can be filled with fines. In gravel sub-bases 7" thick, one pass suffices to produce densities exceeding 100% Standard Proctor. Working speeds from 0 to 60 ft. per minute. 5½ MPH travel speed.

**SOIL COMPACTION.** The powerful, new, self-propelling Jackson Compactor, with 12" to 26" interchangeable bases, achieves specified density of granular soils in 8" to 10" depths at 2400 sq. ft. per hour. Perfect for bridge and pipeline fills, concrete floor sub-bases, etc.

**BLACKTOP WIDENING & PATCHING.** The same machine, operated from power plant on auto-trailer with pickup for Compactor, is most efficient means of blacktop pavement widening and patching, paving walks, drives, etc. Compacts 2400 sq. ft. per hour, close to maximum density.



**GENERAL CONSTRUCTION.** (left); 6 H.P. engine driven, flexible shaft vibrator. Excellent for both thin and thick sections. (Right); 2½ H.P. electric vibrator for light socket operation. Handy as a pocket in a shirt, powerful enough to handle all general construction concrete vibration with shafts up to 28'.

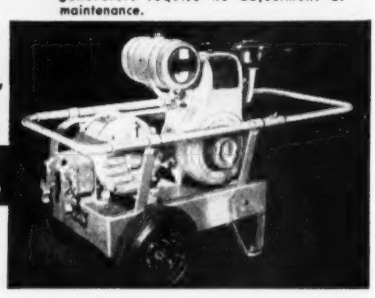
**DUAL CURRENT PORTABLE POWER** for operating all Jackson machines and lights. 1.5 to 7.5 KVA, providing both single and 3-phase 60 Cy., 120 V, AC (120/240 V in larger models). Permanent magnet generators require no adjustment or maintenance.

**FOR SALE OR RENT AT YOUR JACKSON DISTRIBUTOR**

**JACKSON VIBRATORS, INC.**

**ELECTRIC TAMPER & EQUIPMENT CO.**

**LUDINGTON, MICHIGAN**




## Oliver Replaces OC-18 Final Drives

PLAGUED BY TROUBLE with final drives on the big OC-18 tractors they so proudly announced last fall (CM&E, Sept. '52, p. 95), the Oliver Corporation shut down production of the machines on August 1. By that time 183 tractors had been shipped from the Cleveland plant. Final-drive trouble had been experienced on 39 out of the total.

Failures are confined to the final-drive shafts on both sides. These were 4-in. dia shafts ribbed with seven splines. Apparently the shafts were too small and the splines too few to stand up under the heavy torque being transmitted to the tracks. Torque stress was concentrated at the splines—they were chewed up and the shafts snapped into pieces.

In redesigning the final drives, Oliver engineers increased the shafts from 4-in. to 5½-in. dia, and stepped up the number of splines from 7 to 18. Larger shafts meant larger bearings, of course, and the engineers took advantage of the change to introduce a better bearing adjustment, too. On Oct. 5 production was resumed on the OC-18 with the redesigned final drive.

### Fair to All

In the meantime, arrangements were made to replace final drives on all OC-18 models that had been shipped, regardless of whether trouble had been experienced. This is being done through Oliver distributors at no cost to the customer.

For tractors in domestic use, a complete replacement package of redesigned and improved final drive parts is made up. Each kit includes both right- and left-hand assemblies of everything from the transmission case out to and including the rear sprocket necessary to make the change-over. Kits are available to dealers through Oliver branches. Along with each kit are complete instructions on how to make replacements.

The change-over can be done out in the field or in the shop, wherever a crane hook is available.

Upon return of all removed parts to the branch within 45 days after receipt of a kit, along with a warranty claim giving owner's name, tractor serial number and hours of operation, Oliver will compensate the dealer for labor charges.

A somewhat similar deal is outlined for machines in export, again

without cost to the customer. However, instead of sending out complete replacement kits, only certain new parts are being supplied. These will work in with parts removed from the machine to build up the tractor corresponding to the package deal. The dealer is compensated for labor expenditures.

Oliver reports excellent acceptance of the OC-18 among contractors. One contractor came back with a repeat order for six tractors after it was known the final drives were defective. He said he wasn't worried, he wanted the machines now and they could replace the drives at their leisure. CM&E predicted acceptance like this in the issue of September 1952, having become enthusiastic over the easy operating characteristics of the big new crawler.

## Dirt... Enemy of an Engine

THE CUMMINS ENGINE CO. recently made an inspection of units in the field and learned that more than half the units checked had air intake manifold leaks. These leaks permit dust and dirt to enter the engine and literally sandblast the engine's moving parts.

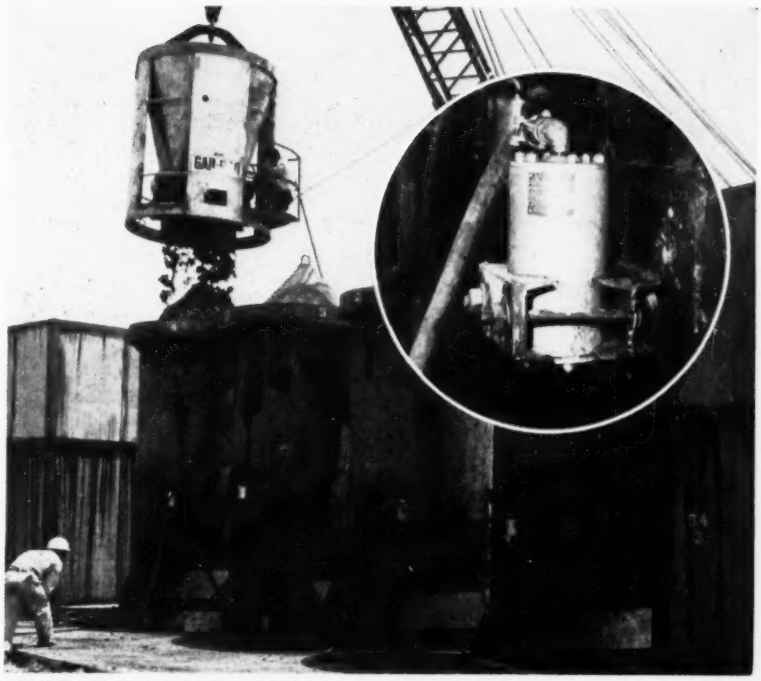
It was discovered during the inspection that a number of operators were actually punching small holes in air intake manifolds to facilitate the application of ether for cold weather starting. Such a practice is extremely foolish. It not only hastens the wear on the engine, but also gives the engine manufacturer an excellent defense should a complaint ever arise concerning short engine life or parts failures. Ether starting kits are available as optional equipment for many engines.

One manufacturer recommends that hose clamps, hoses, and pipes from the air cleaner to the engine be checked for cracks or leaks after every 100 hr of operation.

Air cleaners should be cleaned at regular intervals. Sometimes when conditions are extremely dusty, it is necessary to clean two or three times per day. When you clean the air cleaner, do a thorough job. Remember, there is little point in having an air cleaner on any unit if the engine is getting its air through some hole or crack in the intake system.

Assign someone soon to check your units and make sure dust and dirt are not robbing you of hundreds of hours of engine life.

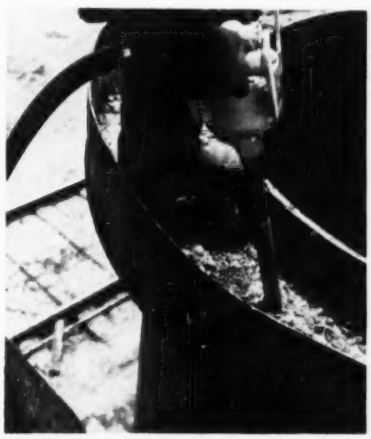
(Advertisement)



VIBER PNEUMATIC EXTERNAL VIBRATORS on heavy steel forms speed production of highest quality reinforced concrete pipe of all sizes.

## External vibration makes concrete pipe better, faster

• **Controlled high speed** external vibration of steel forms can double production of better quality concrete pipe. It produces a smoother finished surface inside and out, and a uniform, high strength section free of rock pockets or honeycomb. It also permits the use of dryer, higher strength concrete, and faster stripping.



FINISHING JOINT SURFACES is easy with a final touch of internal vibration. This 22 lb. VIBER vibrator with 14 inch flexible drive removes air pockets and gives smooth joint surfaces.

Vibration of forms from the bottom up increases the speed at which dryer concrete mixes can be placed. It also saves labor, since one man can move and operate the vibrators for several forms.

VIBER MODEL PX pneumatic external vibrators offer effective rotary vibration in a wide range of amplitude-frequency combinations up to 12,000 RPM. Leading pipe manufacturers have used VIBER PX vibrators to produce thousands of tons of pipe in the United States and abroad. It is not only the best method of manufacture, but for longer sections with heavier reinforcing cages and less form clearance it may be the *only* feasible method.

• **For information** on the model PX or any of VIBER'S complete line of internal and external vibrators, contact your distributor or

VIBER COMPANY

726 South Flower Street, Dept. No. 68
Burbank, California

CONCRETE VIBRATORS SINCE 1931

## Help Wanted . . .

### Experienced in Hydroflation

Equipment age in months_____
Approximate number work hours on machine_____
Tire make_____ Tire size & ply_____
Types of material worked in_____
Pulling work?_____ or pushing work?_____
Do you hydroflate now? ____ Yes ____ No
If no, did you ever use hydroflation? ____ Yes ____ No
In your opinion did hydroflation materially improve machine performance?_____
_____
_____
Present total hours on original tires_____
Estimated hours expected from original tires_____
Present total hours on retread tires_____
Signature_____ Company_____

WE'VE ALWAYS felt a helpful article could be written on hydroflation of tires, but unfortunately we learned there was available very little statistical information to help us compile an authentic helpful article for dirtmovers.

Now we are pleasantly surprised to learn from the summer issue of The Co-Operator, a LeTourneau-Westinghouse publication for equipment operators, mechanics and owners, a survey is being conducted on this very subject of hydroflation of tires. We'd like to help LeTourneau gather this information so at a future date we can give you a complete factual report on this controversial subject of adding calcium chloride and water to the tires to give added weight for better traction and more drawbar pull.

If you would like to contribute your part to this survey, fill in the form above, paste it on the back of a 2c postcard or slip it into an envelope and mail it either to us: CONSTRUCTION METHODS AND EQUIPMENT, 330 W. 42nd St., New York 36, N. Y., or to Field Engineering Dept., LeTourneau-Westinghouse, Peoria, Ill.

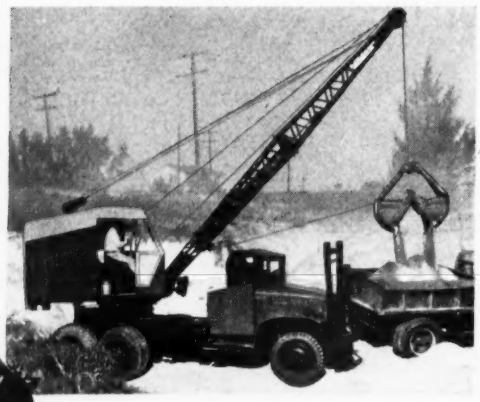
It is not necessary to own LeTourneau equipment to participate.

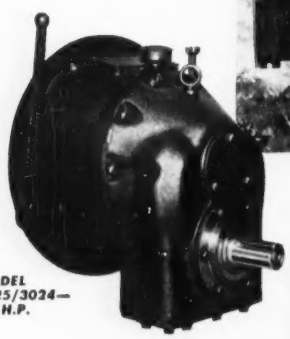
Even if you can't supply all the information requested, fill in what you can and send it in. Any information will help evaluate hydroflation.

### WANT SOME MONEY?

**CONSTRUCTION MEN are coming up with new methods and unique job-built tools and machine accessories all the time. Why not take a picture or two of the next interesting development on your job? Then send pix and a complete description to us for possible publication in Construction Methods and Equipment. The chances are that we can use your material—and you will get your check right away.—The Editor**


# S-N REDUCTION GEARS



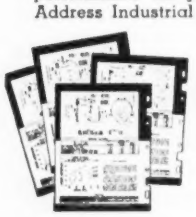


MODEL 2225/3024—40 H.P.

## SPECIFIED AS ORIGINAL EQUIPMENT ON HIGHLY MOBILE DIXIE CRANES

Designed for high speed operations that require a mobile unit, these three-eighths yard bucket Dixie Cranes — made by the Freshwater-Smith Machine Company, Ft. Pierce, Florida — are equipped with S-N Heavy Duty Herringbone Reduction Gears as original equipment in order to insure **maximum versatility** and the **smooth transmission** of **full power** from engine to load — smoothly — and at a minimum cost.

These rugged, compact S-N Reduction Gears are built for grueling, continuous operations with all types of engines from 40 H. P. units to 775 H. P. giants! They can be installed as original equipment or for repowering of pumps, shovels, generators, compressors and all types of dredging and ditching equipment. Available in a broad range of reduction ratios — of 1.5:1 up to 4:1. Our engineers will be glad to specify the best unit for maximum performance on your equipment. Write today for detailed catalog sheets. Address Industrial Division.



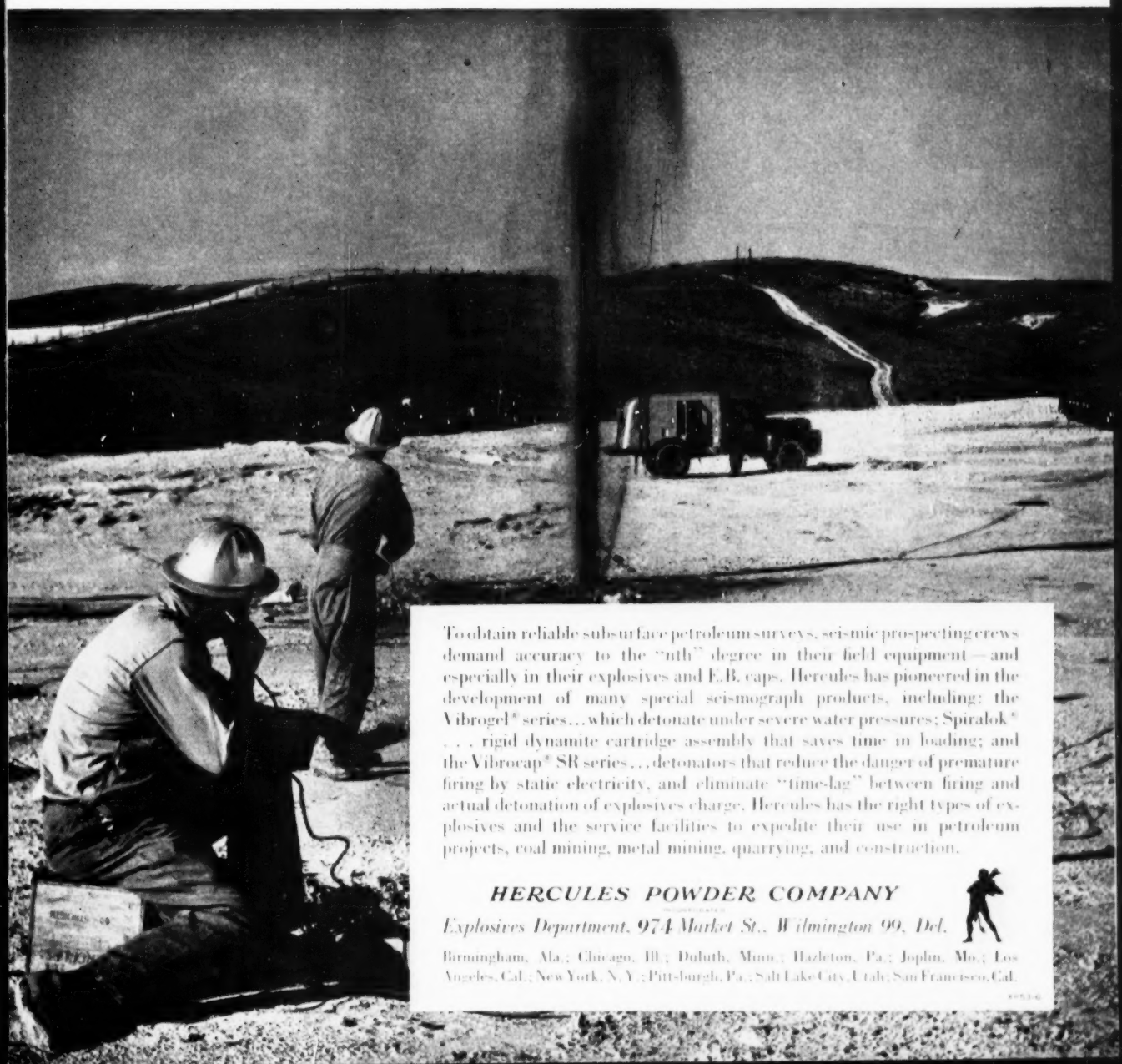
**SNOW-NABSTEDT**

*Transmission Engineers*

FOR NEARLY HALF A CENTURY

THE SNOW-NABSTEDT GEAR CORP., HAMDEN, CONN.

# FOR ACCURATE RECORDINGS...



To obtain reliable subsurface petroleum surveys, seismic prospecting crews demand accuracy to the "nth" degree in their field equipment—and especially in their explosives and E.B. caps. Hercules has pioneered in the development of many special seismograph products, including: the Vibrogel® series... which detonate under severe water pressures; Spiralok® . . . rigid dynamite cartridge assembly that saves time in loading; and the Vibrocap® SR series... detonators that reduce the danger of premature firing by static electricity, and eliminate "time-lag" between firing and actual detonation of explosives charge. Hercules has the right types of explosives and the service facilities to expedite their use in petroleum projects, coal mining, metal mining, quarrying, and construction.

**HERCULES POWDER COMPANY**

*Explosives Department, 974 Market St., Wilmington 99, Del.*

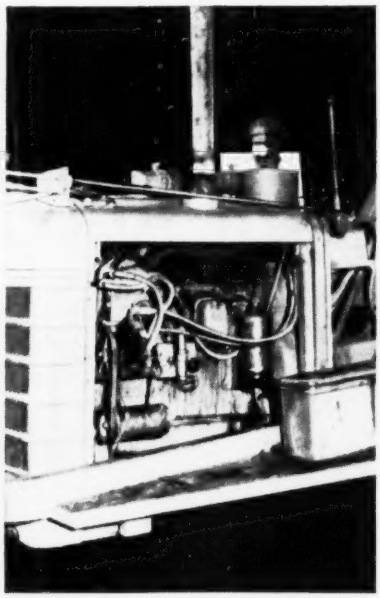
Birmingham, Ala.; Chicago, Ill.; Duluth, Minn.; Hazleton, Pa.; Joplin, Mo.; Los Angeles, Cal.; New York, N. Y.; Pittsburgh, Pa.; Salt Lake City, Utah; San Francisco, Cal.

# The Engineer's Report

CASE HISTORY

LUBRICANT RPM Delo Oils

FIRM Dana Company, Inc., Apple Valley, Calif.



This paving machine diesel worked more than 2400 hours, laid 85 miles of asphalt highway before even the head was removed.

# No bearing, ring trouble in 6 years desert operation!

Sand, wind, dust and heat are tough on engines in the California desert where Dana Company, Inc., develops subdivisions, builds and paves streets and highways. But, using RPM DELO Lubricating Oils, not one engine lost a bearing or stuck a ring in 6 years. Even with constant dust conditions and rapid temperature changes—often from below freezing to 75°F. in a morning—they have no carbon and sludge problem. "RPM DELO Oils keep our engines very clean and cut repair costs," says Mr. Ross Dana, President. "One diesel in a paving machine laid 85 miles of asphalt, worked 2400 hours before it was touched. Then, only a valve grind was needed."

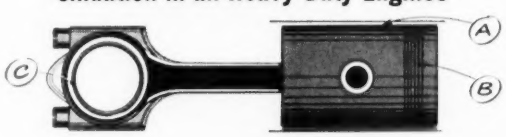
FREE FOLDER tells you about all the RPM DELO Oils and how they meet every heavy-duty engine condition. Write or ask for it today.

FOR MORE INFORMATION about petroleum products of any kind or the name of your distributor, write or call any of the companies listed below.

RPM DELO LUBRICATING OILS

TRADEMARK "RPM DELO" REG. U.S. PAT. OFF.

## How RPM DELO Oils reduce wear, corrosion, oxidation in all Heavy-Duty Engines




A. Contain special additives that provide metal-adhesion qualities...protect parts whether hot or cold, running or idle.

B. Anti-oxidant resists deterioration of oil and formation of lacquer...prevents ring-sticking. Detergent keeps parts clean...helps prevent piston scuffing.

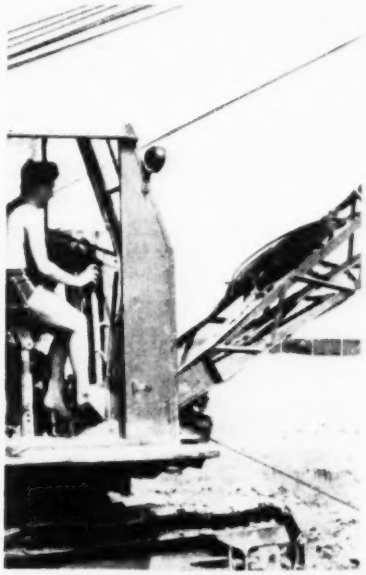
C. Special compounds stop corrosion of any bearing metal and foaming in crankcase.

**STANDARD OIL COMPANY OF CALIFORNIA, San Francisco 20 • STANDARD OIL COMPANY OF TEXAS, El Paso**
**THE CALIFORNIA OIL COMPANY Barber New Jersey • THE CALIFORNIA COMPANY, Denver 1, Colorado**

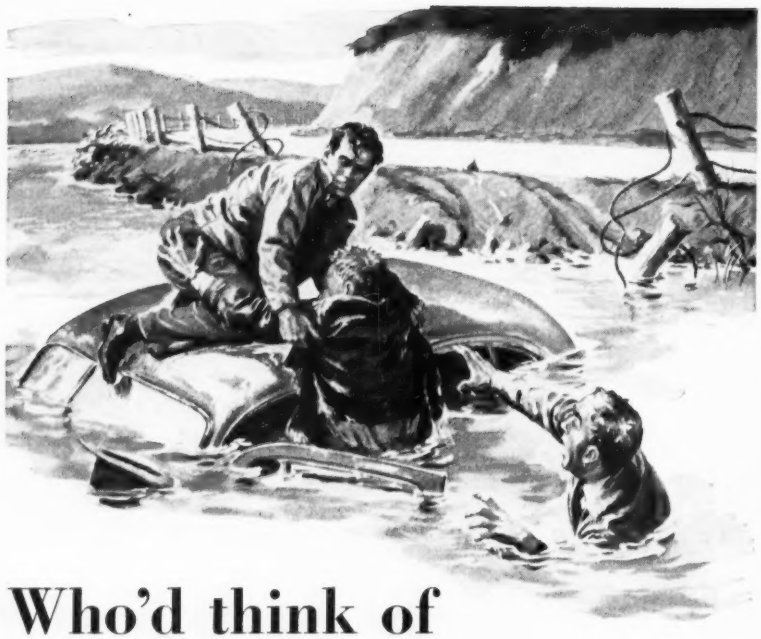
# CONSTRUCTION 'ROUND THE WORLD

**PLUGGING THE DIKE —** The Dutch are busy shutting out the sea again following the heartbreaking loss of dikes last year due to abnormal floods, winds and tides. Tugs ease a 200-ft concrete caisson into a dike gap at Kruiningen, Holland, to close the northern seawall of the Western Scheldt River leading to Antwerp. This breach was one of four last remaining.—Wide World photo

**ARCHES HOLD ROOF —** One-inch steel bars suspended from two reinforced concrete arches support the roof of a modernistic shopping center in Mexico City. Constructed on a radius of 98 ft, the arches tower above the roof externally and straddle a span of 139 ft on the ground. Each end is well supported upon a deep bed of volcanic rock. Depth of the concrete arcs where they enter the ground is 10 ft. Width is 14 in. Roof-supporting bars are spaced every 10 ft in groups of four.



**NOW TRY THIS —** Ever operate a crane clad only in a pair of swim trunks? This chap was found handling a dragline last summer on an earthmoving job in England. He may beat the heat, but what about those unprotected shins?



# Who'd think of engineering reports

## at a time like this?

*(A true story based on Company File 96B12246)*

Our company has a contract to do engineering research work on a government project.

The day we finished at the experimental station, we stowed a brief case bulging with notes, technical drawings and progress reports in the car's trunk. Then we headed for our home office.

About half way, we missed a tricky curve and wound up in a river. Fortunately, we all got out of the car safely. But we were too shaken up to think about rescuing the brief case. It stayed under water five hours — long enough to make much of its contents illegible. *Weeks of work were washed out.*

Too often, in a situation like this, a company finds itself taking a large financial loss.

Why? Simply because no one gave a thought to adequate Valuable Papers Insurance.

Valuable Papers Insurance—which can be written to apply on and off your premises—covers loss or damage due to fire, storm, water, explosion, riot—even theft, vandalism, and just plain disappearance. It pays the cost of restoring or replacing notes, reports, plans, drawings, tracings, maps, books, documents and similar records. Irreplaceable material is insured for a stipulated value payable in cash.

Considering the broad protection it offers, Valuable Papers Insurance is remarkably low-priced. Ask your Hartford Accident and Indemnity Company Agent or your insurance broker for full details—*today!*

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# *On-the-Job* Contractor-Labor Relations

by LEON B. KROMER, JR.

## Holiday Pay

THREE MAJOR HOLIDAYS in the offing highlight the paid holiday provisions of collective agreements. The fact that two holidays this year (Memorial Day and July Fourth) fell on Saturday spelled trouble for some contractors. They thought that the paid holiday provisions of their agreements required payment for time not worked when the holiday fell on a regular work day. They did not expect to pay for time not worked on Saturdays, when no work was scheduled.

The agreements did not spell this out, merely providing for pay for six national holidays not worked if the employee worked the last scheduled work day before the holiday. The contractors were certain of their intentions when agreeing to the provision—to prevent loss of pay to employees when a holiday fell on a regular work day.

After the fur had stopped flying, the contractors paid—a contingency not contemplated in current lump sum contracts—and a precedent has been established that probably would continue as long as there are holidays and Saturdays.

Check the holiday provisions of your agreements to make certain that they set forth what you agreed upon. If, as in the case cited above, you intended that employees not be penalized by loss of pay when a holiday falls on a regular work day, the agreement should make this clear. Example: Each employee shall receive eight hours pay for time not worked on (specified holidays), provided that the holiday falls on a day the employee would have worked had the day not been a holiday.

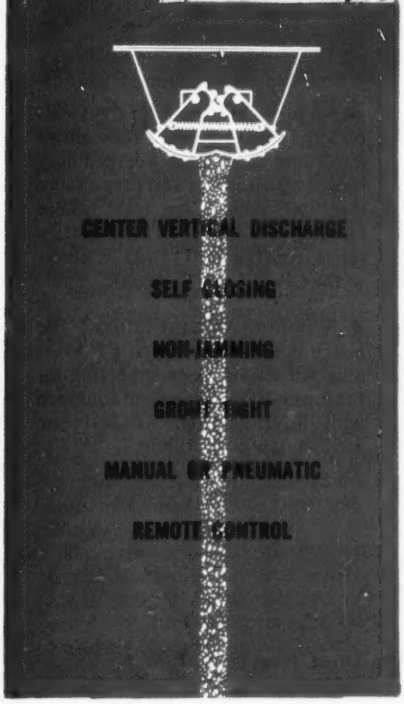
However, if you agreed to pay for certain holidays as such the agreement should leave no doubt on this score. Example: Employees will be paid eight hours pay for time not worked on the following holidays (specify holidays), including any one of the holidays falling on Saturday.

The fact that your agreements contain no such provisions at the present time doesn't mean that you

*(Continued on page 167)*

# GAR-BRO tells a secret...

**THE DOUBLE CLAMSHELL GATE** is the patented secret behind the fast, easy operation of Gar-Bro Concrete Buckets and Hoppers. First, they discharge vertically without segregating the concrete. Second, they are absolutely grout tight. And third, they are self-closing and non-jamming.




## *about faster concrete handling*

**GAR-BRO HOPPERS** with double clamshell gates keep barrows and carts moving and prevent delay of truck mixers. They pay for themselves in a short time.

**GAR-BRO CONCRETE BUCKETS** of all types and sizes have double clamshell gates which can be equipped with Gar-Bro accordion hoppers (patented). They open and close with the gate and confine concrete when placing in small forms. They prevent segregation by eliminating free dumping. See your Gar-Bro dealer; ask for the new "Concrete Handling Manual."

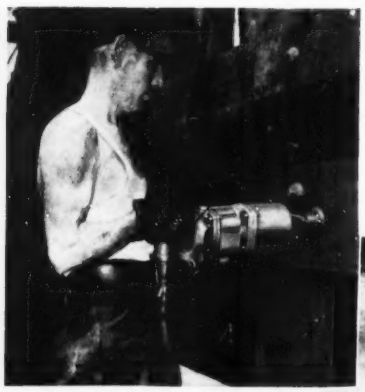
EQUIPMENT • GAR-BRO • ENGINEERING SERVICE

**THE WORLD'S MOST COMPLETE LINE OF CONCRETE HANDLING EQUIPMENT**

**GAR-BRO MANUFACTURING CO. • Los Angeles, Calif. • Peoria, Ill.**
**General Offices: 2415 E. Washington Blvd., Los Angeles 21, Cal.**

*GET THE FACTS! Write for your free copy of the new 56-page "Manual and Check List for Faster Concrete Handling and Placing." Includes tables, references, correct and incorrect methods, unusual jobs solved and other data.*

# make tough jobs EASY!



▲Tool of a Thousand Uses—CP-365 Air Impact Wrench is a real time saver in nut removal, bolting-up of structural steel members and driving lag screws. And it serves as a perfect maintenance tool—keeps equipment in top condition.

▲No job is too tough for CP Demolition Tools to handle. They afford maximum penetration, yet their easy handling qualities and responsive throttling action are ideal where footing is hazardous. Capacities range from the CP-111 (25 lb. class) to the CP-117 (80 lb. class).

◀ A team that's hard to beat! The heavy duty, diesel driven CP Portable Air Compressor supplying air for the G-300 Wagon Drill equipped with 70-NDC Drifter. An ideal team for fast, low cost drilling.

**Chicago Pneumatic** *8 East 44th Street, New York 17, N. Y.*

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES • ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

**LABOR** . . . Continued from page 164

may not be faced with a demand the next time you sit down to negotiate with the unions. If you agree during negotiations to paid holidays in addition to the Saturday holiday question, remember to cover these points:

**1.** Condition payment for a holiday not worked on the employee working in that week his last scheduled work day prior to the holiday, and

**2.** If an employee is scheduled to work on one of the specified holidays and does not report for work he receives no pay for the holiday.

Paid holiday provisions clearly stated in collective agreements elimina'e another area of dispute between the contractor and building trades unions.

## A Test of Strength

Contractors are watching with interest, but not envy, the test of strength now going on between international officials of the building trades unions and the locals at the strike-ridden Joppa, Ill., power plant project.

The new contractor, Bechtel Corp., attempted to hire six hand-picked ironworkers and was accused by the union of hiring out-of-area men. The contractor pointed out that previously all had been working in the area. The ironworkers local called a strike and has been picketing the project for more than a month.

Aroused over the number of unauthorized strikes at the plant, top officials of the building trades began to crack down on the local unions in the Joppa-Paducah area. The international president took the charter away from the ironworkers local when its officials refused to obey back-to-work orders and set up a new local to take over jurisdiction of the job. Officials of the old local, strongly supported by members, are in open defiance of the international and continue to picket.

Meanwhile, the contractor has obtained a temporary restraining order from the U. S. District Court at East St. Louis, Ill., but so far the men have not reported for work.

To date one local union, attempting to dictate whom the contractor shall hire, defying orders of its president and the pressure of top building trades officials, is delaying work on a multi-million-dollar

*(Continued on page 170)*

Twin Disc Torque Converters in

First Legal* 45 ton Hi-way Cranes

Twin Disc Torque Converters are incorporated in the new 45-ton trailer-mounted Hi-Way Crane developed by Osgood-General, in conjunction with Talbert Construction Equipment Company.

Adding a new and versatile tool to the construction industry's and heavy rigger's equipment list, the new crane will lift 45 tons and handle up to 145 feet of boom and jib . . . and will meet highway load restrictions in the various states.

Torque converter operation enables the crane to lift and handle heavy and awkward-shaped loads to great heights with smooth and accurate control, permitting delicate inching and hovering of loads.

*Legal on Highways of nearly every state, with permit.

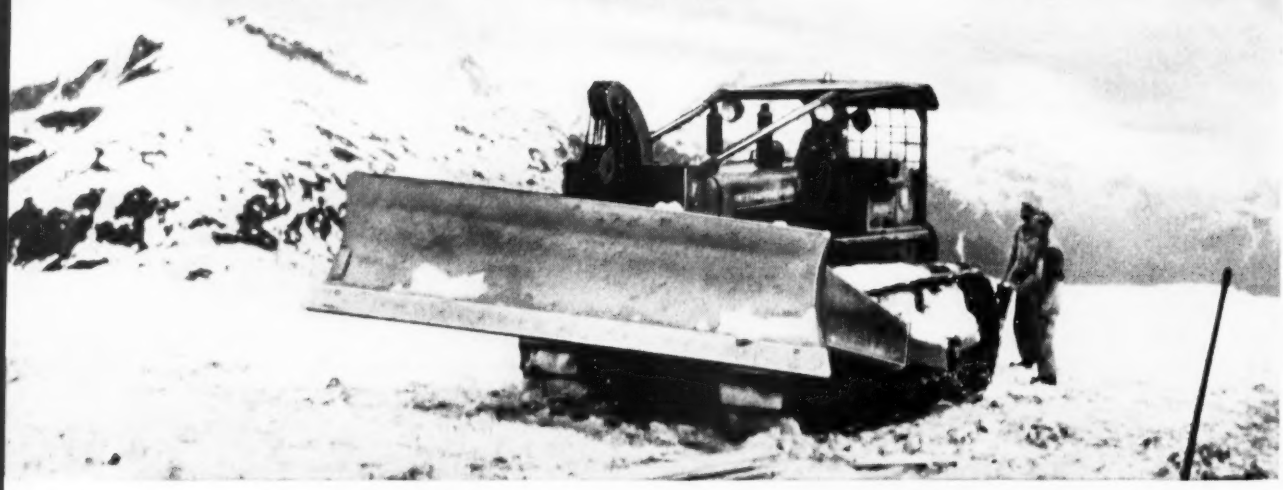
TWIN DISC

TWIN DISC CLUTCH COMPANY, Racine, Wisconsin • HYDRAULIC DIVISION, Rockford, Illinois

BRANCHES: CLEVELAND • DALLAS • DETROIT • LOS ANGELES • NEWARK • NEW ORLEANS • SEATTLE • TULSA

**ESTABLISHING MOUNTAIN-TOP BASE,** a helicopter and a TD-24 put men, machinery and supplies on mile-high pass as first step in efforts to build road down to meet section coming up from each side. TD-24 pulled yarder, winch, and compressor into pass after bitter 7-day fight.

# Big



**1 RAISING KENNEY DAM** to fill the Grand Canyon of the Nechako River, workers sluice down some of the 3.8 million cubic yards of earth and rock it will eventually contain. Dam will form a reservoir with twice the capacity of Grand Coulee. TD-24 in foreground strips blasted rock from canyon wall abutment.

**2 HEADING OPERATIONS** at Kenney Dam are (left to right) Alcan Resident Engineer Harry Jomini; General Superintendent "Hak" Nielsen and Project Manager Jack Bremner, both of Mannix, Ltd., sub-contractor for Morrison-Knudsen Company of Canada, Ltd. 110 miles west, dammed-up waters will be diverted through mountains and dropped a half mile to run turbines in sea-level powerhouse.

**3 DRIVING TEN-MILE TUNNEL** through mountain is done from four headings. Here, half a mile above ocean-level valley, aerial tramway has delivered TD-24 to tunnel portal for working debris down mountain. 2,600 feet below, eight-story powerhouse inside mountain is being mucked out by a TD-24 and a TD-9.

# Red TD 24 Pioneers New Frontier

## 59 International TD-24s spearhead largest integrated engineering program in history for Alcan (Aluminum Company of Canada, Ltd.) on Project British Columbia

A fleet of 59 hard-hitting International TD-24s is blazing a new frontier across 5,000 square miles of wilderness in British Columbia.

Twenty-four hours a day, they're on the go for Morrison-Knudsen Company of Canada, Ltd., prime contractor for most of the giant development that includes:

**Building the largest sloping clay core dam in the world**

**Driving a subway-size tunnel ten miles through a mountain**

**Blasting out an eight-story powerhouse two blocks long inside solid rock**

**Erecting a transmission line fifty miles long over a jagged mountain range**

**Raising the world's largest aluminum smelter and a new port city at Kitimat where 50,000 people may eventually live and work.**

A. O. Strandberg, project manager for Morrison-Knudsen, says:

*"These TD-24s are doing the impossible. We never thought any tractor could go where these tractors are working now. They have the weight, they have the balance, and they have the power to get the job done."*

And here's what superintendents on the firing line say:

**Bill Richards:** *"They're pushing boulders uphill we had to dynamite in the old days."*

**Herb Wilkinson:** *"I wouldn't believe where they'd go until I got them on my crew."*

**John Hutton:** *"They're doin' work up here they were never built for but they're doin' it just the same."*

Your International Industrial Distributor can give you the facts and figures on the TD-24. See him. You'll be a TD-24 man from then on in!

**INTERNATIONAL HARVESTER COMPANY • CHICAGO 1, ILL.**

INTERNATIONAL HARVESTER

**INTERNATIONAL**

POWER THAT PAYS

**4** **INSPECTING MOUNTAIN TOP OPERATIONS** at Kemano, headquarters for construction of powerhouse, tunnels and transmission line are (left to right) A. O. Strandberg, Project Manager for Morrison-Knudsen; F. T. Matthias, Alcan Assistant Project Manager, and Walter Abrahamson, Alcan Assistant Resident Engineer at Kemano.

**5** **LINKING UP POWER TRANSMISSION LINE ROAD,** a pair of TD-24s doze toward each other through blasted rock. Across 50 miles of rugged terrain like this, a mountain-anchored powerline will be built to flash abundant electricity from mountain powerhouse to smelter at tidewater.

**6** **NEW LAND IS MADE IN OCEAN INLET** by dredge which deepens anchorage for ocean shipping at the same time. H. M. Whiting (right), Project Manager for Kitimat Constructors, Ltd., and a superintendent study progress. Part of this 70 acres of new land will become site of new aluminum smelter. Town which may eventually become city of 50,000 will be built across the bay.

## HOW TO HANDLE WET JOBS

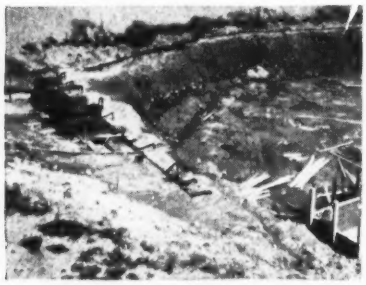
#22 of a series

### ATOMIC SUBMARINE LABORATORY

West Milton, N. Y.

*Excavation: Elmhurst Contracting Co.*

**QUAKY SOIL—fine alluvial silt overlying bedrock — was a hazard confronting General Electric and A.E.C. Vibration of excavating machinery made soil fluid, caused collapse of test hole.**



**A VACUUM WELLPOINT system, by Griffin, solved the rare type of problem involved. Removal of small amounts of water (only 20 gpm)—this plus high vacuum was enough to make soil stable—even to stand at slopes as steep as 1½ on 1 (See photo).**

THE SKILLS of the wellpoint engineers were taxed in many ways. A vacuum system is itself complex. The sand filters required special techniques. Though part of subgrade lay 25 ft below ground water, a multi-stage system was avoided —by working with header line *below* natural water table.

**GRIFFIN**

**WELLPOINT CORP.**

881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Houston, Tex. Jacksonville, Fla.

In Canada: Construction Equipment Co., Ltd.
Toronto Montreal Halifax

**LABOR . . . Continued from page 167**

power plant directly related to the Paducah atomic energy project.

There is a lesson here for building trades unions, contractors, local and federal government officials in planning future $100-million-plus projects.

## The New Labor Secretary

Contractors have in James P. Mitchell, the new Secretary of Labor, a man who understands many of their problems. Coming to Washington in 1940 with General Somervell, who took over all Army defense and war construction, Mitchell was put in charge of the Corps of Engineers Labor Relations Division. He was one of the key negotiators to bring about the wartime Building Trades Stabilization Agreement which established uniform working conditions on all war construction.

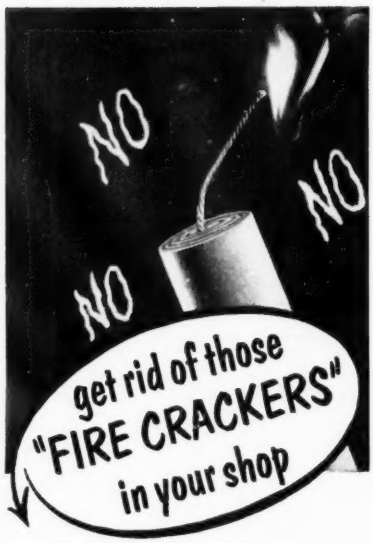
He later was appointed director of the Industrial Personnel Division, Army Service Forces, but continued to assist in administering the Building Trades Agreement.

On leave as vice-president for Personnel and Labor Relations at Bloomingdale Brothers, Inc. (a New York department store), Mitchell was Assistant Secretary for Manpower and Reserve Affairs in the Army. While George Meany, A.F. of L. president, declined to comment on the appointment, it is significant that both Dick Gray, president, and Joe Keenan, secretary-treasurer of the Building Trades Department, were on hand when Mitchell was sworn in as Secretary of Labor.

## Death of a Leader

"Big Bill" Hutcheson, president emeritus of the United Brotherhood of Carpenters and Joiners, died October 20 at Indianapolis. For more than 37 yr "Big Bill," as president of the carpenters, was one of the dominant personalities in the labor movement, a staunch advocate and defender of the craft union form of organization and one of the few Republicans among top labor leaders.

Even after his retirement Big Bill Hutcheson exerted a powerful influence, not only in the United Brotherhood of Carpenters (he was credited with withdrawing the carpenters from A. F. of L. last summer), but also in the councils of the A. F. of L. where he had served as first vice-president.

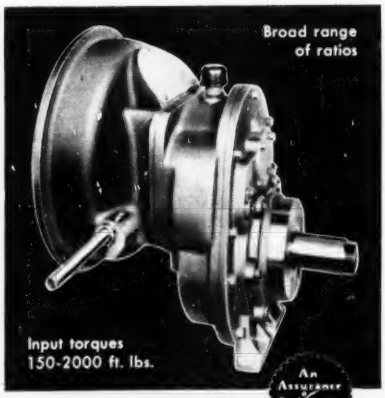




What fire crackers? We mean those welding and cutting torches that keep popping—back-firing—burning out valve seats. Did you know that the ingenious new Smith "FLO-TROL" prevents reverse flow of acetylene—protects torch against backfire and burned out seats?

Write us a card . . . NOW!

**SMITH WELDING EQUIPMENT CORPORATION**

Dept. CME-81, 2633 S.E. 4th St., Minneapolis, Minn.




**Special heavy-duty**

- **Transmissions**
- **Reduction Units**
- **Mechanical Drives for Torque Converters**

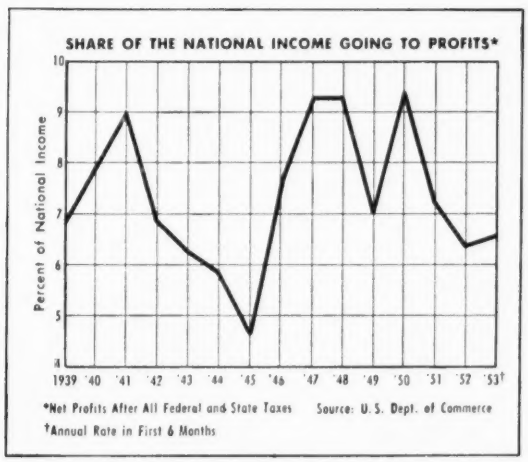
Cotta Transmission Co., Rockford, Illinois

**COTTA HEAVY-DUTY TRANSMISSIONS**

*"Engineered-to-order"*

*The first of two articles on profits*

# PROFITS...How High Are They?


SHARE OF THE NATIONAL INCOME GOING TO PROFITS*
Percent of National Income
10
9
8
7
6
5
4
1939 '40 '41 '42 '43 '44 '45 '46 '47 '48 '49 '50 '51 '52 '53†
*Net Profits After All Federal and State Taxes
†Annual Rate in First 6 Months
Source: U. S. Dept. of Commerce

How high are profits? What is being done with them? This is the first of two articles designed solely to throw some factual light on these key economic questions.

One of the important economic developments of 1953 has been a substantial increase in the dollar volume of corporation profits from the level of 1952. But to answer the question "How high are profits?" we must also measure them: 1) by comparison with the record of previous years, and 2) as a share of the total national income. The term "profits," as used here, refers to profits *after taxes*. These are the only profits that can be paid to stockholders or retained for use in the business.

In the first six months of 1953, corporate profits *after taxes* were at an annual rate of $20.4 billion. This was higher than in the first half of 1952, but lower than in the full years 1948 or 1950, or in the first half of 1951. If allowance is made for the declining value of the dollar, this year's net profits for all corporations represent less purchasing power than those made five or six years ago.

Here is the record of profits over the years:

| | Net Profits After Taxes of All U. S. Corporations | |
|---|---|---|
| | Billions of Dollars | |
| | Actual | In 1953 Prices |
| 1929 | 8.4 | 14.6 |
| 1939 | 5.0 | 9.8 |
| 1947 | 18.5 | 22.1 |
| 1948 | 20.7 | 22.7 |
| 1949 | 16.3 | 18.3 |
| 1950 | 22.7 | 24.6 |
| 1951 | 20.1 | 19.7 |
| 1952 | 18.6 | 18.7 |
| 1953* | 20.4 | 20.4 |

*Annual rate, first six months

The record shows that real profits have a little more than doubled since 1939. This increase, however, does not mean that corporations are doing exceptionally well. The entire national income has doubled since 1939. And our industrial plant is more than twice as large as it was in 1939. Therefore, profits have just about kept pace with industrial growth.

### Return on Investment

How high are profits compared with sales, or compared with the stockholders' investment?

(Continued on next page)

What is the rate of return to the people who have invested their savings in corporate business?

The table below shows that for the past three years the rate of return on both sales and investment has been substantially below the return achieved in earlier postwar years. The rate of return on stockholders' investment is higher now than it was in 1939. But this is primarily because today's profits are reported in terms of today's prices, whereas much of the investment in plant facilities is still carried on the books at prewar prices, which are substantially below the cost of replacement. The current rate of return, measured as a percentage of total corporate sales, is below prewar levels.

| | Corporate Profits After Taxes | |
|---|---|---|
| | Per Cent of Total Sales | Per Cent of Stockholders' Equity * |
| 1929 | 6.1 | NA |
| 1939 | 4.1 | 4.0 |
| 1947 | 5.3 | |
| 1948 | 5.3 | 14.8% average |
| 1949 | 4.4 | |
| 1950 | 5.3 | |
| 1951 | 4.1 | 11.8 |
| 1952 | 3.6 | 10.3 |
| 1953# | 3.7 | 10.8 |

* Manufacturing corporations only
NA Not available
# Annual rate, first six months

In considering these figures, it should be remembered that they are averages for all corporations. Some companies make more than the average, and many make no profit at all. In every year since 1915 at least 25% of all corporations have operated at a loss. In 1939, 58% of all corporations were losing money. This year the figure will probably be at least 30%. The improvement since 1939 shows a much healthier economy. But it does not indicate that profits are easy to make.

### How Big a Share of the Pie?

The most important single fact about profits is that they now represent a *smaller* share of national income than they have in past years of normal prosperity. For the past three years, profits have taken a smaller share of the pie than in 1939, and considerably smaller than in the early postwar years. Here, as the chart at the beginning shows, is the record:

| | Corporate Profits After Taxes as a Percentage of National Income |
|---|---|
| 1929 | 9.6 |
| 1939 | 6.9 |
| 1947 | 9.3 |
| 1948 | 9.3 |
| 1949 | 7.5 |
| 1950 | 9.4 |
| 1951 | 7.2 |
| 1952 | 6.4 |
| 1953* | 6.6 |

*Annual rate, first six months

The main reason for the declining corporate share of national income is, of course, the increasing share taken by the federal government in the form of taxes. The wage earners' share is also higher than in 1939. But the really startling increase is in federal taxes. Taxes on profits now equal almost 8% of the national income, compared to only 2% in 1939.

### Why This Is Important

It is important that these facts about profits and taxes be widely understood. At its next session, Congress must consider what to do about the emergency taxes on profits enacted after the outbreak of the Korean War. The so-called excess profits tax is scheduled to die on January 1, 1954. In the absence of new legislation, the rate of the corporate income tax will drop from 52% to 47% on April 1. Many factors, including the revenue needs of the government, must enter into the decision whether or not to reduce taxes. But one fact stands out clearly: By comparison either with past years or with the total national income, corporate profits today are relatively low.

* * *

*The second article in this series will discuss what corporations do with their profits.*

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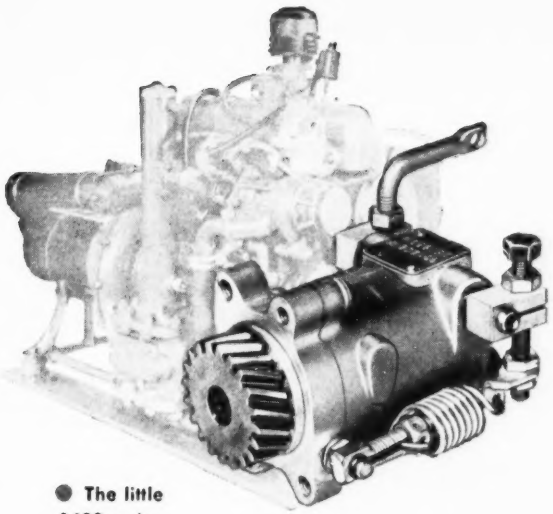
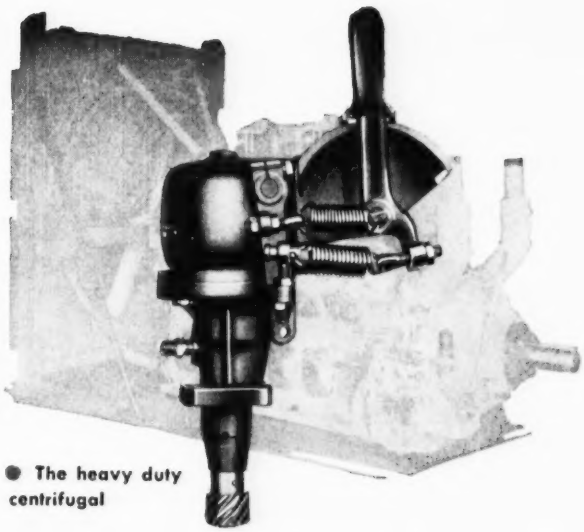


● The little 1400 series

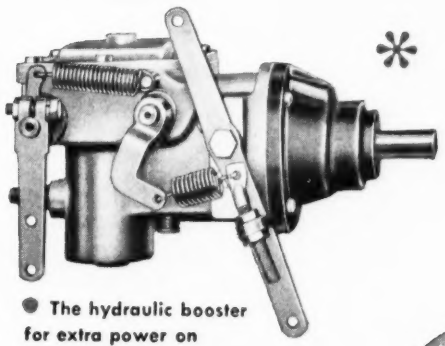


● The heavy duty centrifugal

# PIERCE GOVERNORS

## preferred for gas (LPG), gasoline and diesel industrial engines... big, medium and small

● The standard long range 900 series



● The hydraulic booster for extra power on racks and valves

Pierce centrifugal governors are your most economical and efficient control mechanisms for industrial engines . . . from small generator sets to monster power units . . . gas (LPG), gasoline or diesel. For engines requiring extra power to position fuel rack or valve, the Pierce centrifugal with hydraulic booster* (for original equipment only) is ideal! Service is locally available . . . your nearby Pierce Service Station is equipped for all types of Pierce Governors.

Specify PIERCE Centrifugal governors on your engines . . . for economical, thoroughly dependable control in industrial applications.

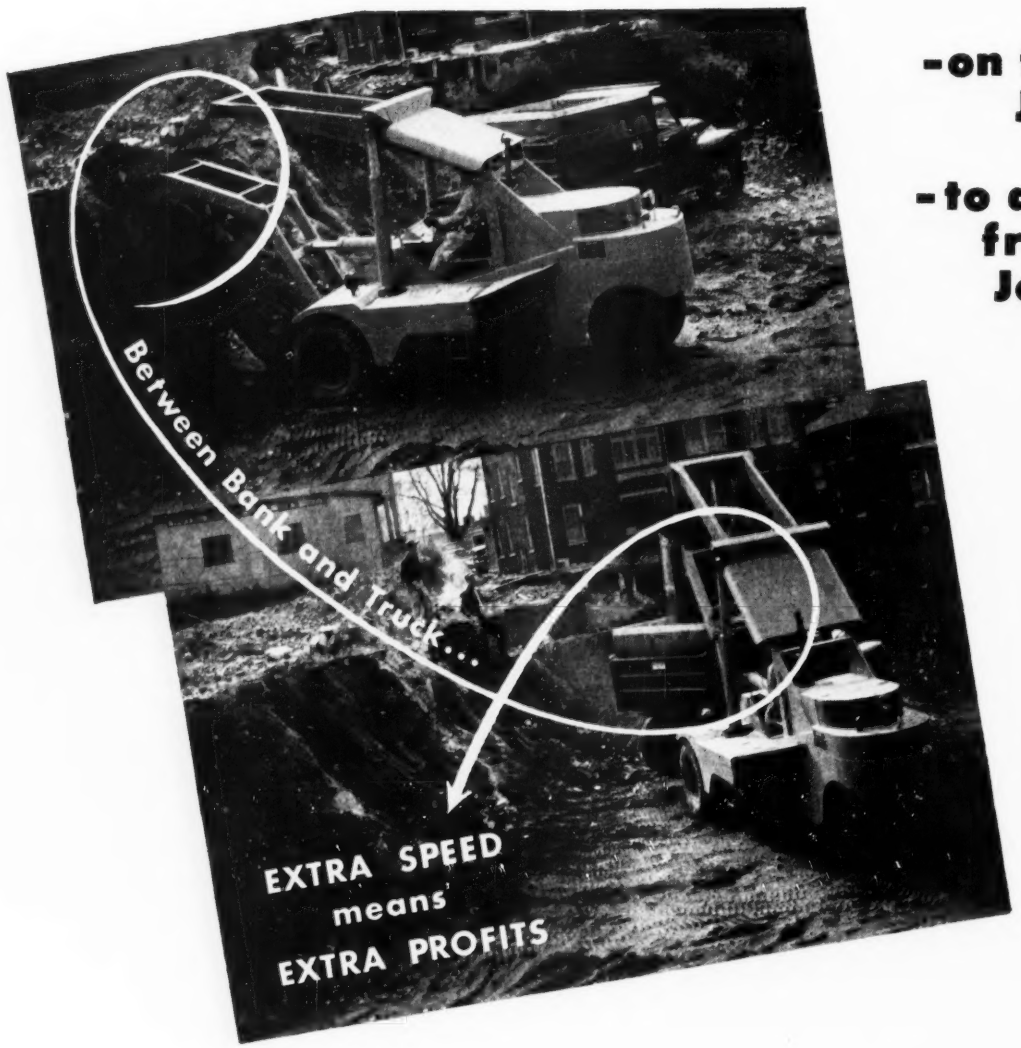
PIERCE — THE MARK OF QUALITY

**THE PIERCE GOVERNOR CO., INC.**

1622 OHIO AVENUE, ANDERSON, INDIANA

"World's Most Experienced Governor Manufacturer"

# This Dempster-Diggster Hydraulic Shovel gives you *TRUCK-SPEED MOBILITY*




**-on the Job**

**-to and from Jobs**

These fast moving advantages are obvious and mean the Dempster-Diggster will make more money for you.

In the first place, no hauling equipment is needed . . . no loading and unloading time or man-hours are lost in getting the Dempster-Diggster to and from jobs. In the second place, with truck-speed mobility on the job, this power-packed 100% Hydraulic Shovel gets the job done faster! Here's a shovel that won't skim the bank or bottom—but gets a full bucket with every stroke. It's the only small shovel that offers you all the important features of big shovels . . . Simultaneous and Independent Crowd and Hoist . . . Hydraulic Crowding . . . Hydraulic Hoisting . . . Variable Crowd Action at any Dipper Position in addition to Changeable Buckets for digging or loading.

Write for complete facts on this revolutionary, power-packed hydraulic shovel. A product of Dempster Brothers, Inc.

**DEMPSTER BROTHERS, 3113 Shea Bldg., Knoxville 17, Tennessee**

# SALES AND ★ SERVICE ★

News of manufacturers' activities designed to assist the reader in the purchase of machinery, equipment and materials and help him obtain quick service on parts and maintenance.

## Distributor Appointments

**Warner Electric Brake & Clutch Co.:** The George J. Fix Co., Dallas, Tex., has been named southwestern distributor for the industrial division. Sales offices will also be maintained in Houston, Fort Worth and Tulsa, Okla.

**The Baker-Raulang Co.:** Appointment of Industrial Truck Sales, Inc., as representatives for Baker industrial trucks and cranes in western New York State was announced.

**The Euclid Road Machinery Co.:** Announces the appointment of Colorado Builders' Supply Co. as its new distributor in Colorado, most of Wyoming and eleven western counties of Nebraska. Headquarters are at 1300 W. Evans Ave., Denver.

**A. O. Smith Corp.:** U. S. Steel Supply Div., U. S. Steel Corp., Chicago, has been appointed distributor for Smith welding products in the West Coast area, with warehouse facilities at Los Angeles, San Francisco and Portland, Ore.

**St. Paul Hydraulic Hoist:** The appointment of Mobile Power Brake and Equipment Co., Mobile, Ala., as a distributor has been announced. The company will cover the following territory—Clarke, Washington, Monroe, Mobile, Baldwin and Escambia counties in Alabama; Perry, Greene, George and Jackson counties in Mississippi; and the counties of Escambia, Santa Rosa, Okaloosa, Walton, Holmes, Washington and Bay in Florida.

**Clark Equipment Co.:** Has appointed the Crunkleton Co., 5324 McCorkle Ave., S.E., Charleston, W. Va., as a distributor of its full line of materials handling equipment.

**Joy Manufacturing Co.:** The following have been appointed distributors to handle Joy construction equipment in their areas—Iowa FWD Truck & Equipment Co., Ames, Iowa; Industrial Marine Supply Co., Pensacola, Fla.; and All Wheel Drive Co., Davenport, Iowa.

**Cleco Pneumatic Tool Div., Reed Roller Bit Co.:** Has announced the appointment of two distributors for Cleco products in New Jersey and one in Africa. J. Schlank Co., Inc. of Harrison, N. J., Allied Equipment

# "INFERNO" Steam Hose

Pile driving at a record-making pace is an ordinary accomplishment with Goodall's "Inferno" Steam Hose . . . the Contractors' favorite for many years, for jobs involving *any* heavy duty steam work. Built to assure the utmost in reliability and safety, with high-temperature tube; multiple-braid steel wire carcass; and red wear- and weather-resistant synplastic cover. Sizes ½" to 3", inclusive, in maximum lengths of 50 feet.

*Other Goodall products for Contractors include additional brands of steam hose; air, water, grout, jet and suction hose; conveyor, grader and mucker belting; waterproof clothing and footwear.*

PARTICIPATING IN THE MANAGEMENT AND FINANCING OF KENTUCKY SYNTHETIC RUBBER CORPORATION

GOODALL RUBBER COMPANY

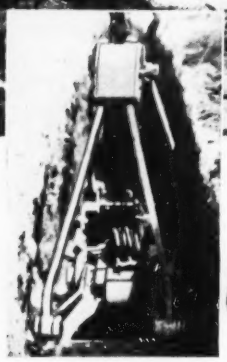
GENERAL OFFICES, MILLS and EXPORT DIVISION, TRENTON, N. J.

Branches: Philadelphia • New York • Boston • Pittsburgh • Indianapolis • Chicago • Detroit • St. Paul • Los Angeles • San Francisco • Seattle • Spokane • Portland • Salt Lake City • Denver • Houston • Goodall Rubber Company of Canada, Ltd., Toronto • Distributors in Other Principal Cities

Est. 1870

Top notch efficiency in

DEEP DOWN SPOT DIGGING...



Tangible, valuable features contribute to the exceptional trench excavating of

OWEN BUCKETS

Basic features include: *correctly designed shells* for easy penetration and discharge—*removable counterweights* to help force the shell into material and the block and tackle principle of multiplying closing power.

Others are *low headroom* that makes handling easy—*low center of gravity* that aids in placing the bucket when below the line of vision and *side cutters* which cut clearance for the bucket and aid in maintaining parallel trench walls.

"A mouthful at every bite"

BUCKETS AND GRAPPLES

Write for Catalog

THE OWEN BUCKET CO.

5220 Breakwater Avenue • Cleveland, Ohio

Branches: New York, Philadelphia, Chicago, Portland, Calif., Fort Lauderdale, Fla.

**SALES AND SERVICE . . . Cont'd**

and Supply Co. of Bayonne, N. J., and Matermaco-Congo, with headquarters at Elizabethville, Belgian Congo, will handle Cleco air tools and related products.

**Edward Ehrbar, Inc.:** Announces the opening of a new modern plant in Poughkeepsie, N. Y. The new building, located on South Road, Route 9, features integrated shop, parts, and showroom facilities, and will handle sales and service on the following lines of equipment—International, Hough, Adams, Barber-Greene and Thew-Lorain.

**Lippmann Engineering Works:** Has appointed the following distributors to handle Lippmann crushing, screening and conveying machinery —Vancouver Equipment Corp., Ltd., Vancouver, B. C.; Highway Equipment Co., Harrisburg, Pa.; and Casey-Metcalfe Machinery Co., Los Angeles, Calif.

## On the Sales Front

**The Frank G. Hough Co.:** Has appointed two new district representatives to work with Hough distributors in the sales and promotion of Payloader tractor-shovels and tractors. Jack C. Bever will operate in the District of Columbia, Maryland, Virginia, West Virginia and the Carolinas. Dwain Richey will travel in Arkansas, Louisiana, Oklahoma, Texas and New Mexico.

**Koehring Co.:** Has announced the appointment of E. A. Smith as vice-president and manager of its two export sales subsidiaries, Koehring Inter-American Co. and Koehring Overseas Co. Two transfers in the sales departments of Koehring and one of its subsidiaries, Parsons Co., have also been announced. R. E. Bansemer has been named sales manager for Parsons and M. O. Messenger assistant sales manager in the parent company.

**Barber-Greene Co.:** Kentner W. Shell has been named manager of the Washington, D. C. sales area; Ralph H. Dano is being transferred from Washington to the company's office in Aurora, Ill. to succeed Bernard E. "Lindy" Lindstrom as manager. Mr. Lindstrom has been reassigned as manager of the New Market Development section of the company's sales force. Edward J. Curtin has been appointed sales manager of the company's northeastern sales area which includes New England, New York and part of New Jersey. Earle F. Lamprey has been assigned to a new post in the company's New York office where he will supervise export activities in the New York area, be charged with government liaison on export matters and assist the many New York manufacturers and engi-

*(Continued on page 179)*

Whiteman Power Buggies roll right under truck-mixer chute to receive their loads.

Concrete is poured directly into Power Buggies which handle capacity loads every trip.

Power Buggies speed over portable timber ramps at 16 mph, never get tired.

Concrete is poured quickly, accurately with dumping mechanism under positive control at all times.

# Whiteman

## POWER BUGGIES set a

# YARD-A-MINUTE PACE...

## ...ON BIG NEW YORK PIER JOB

Pouring the 100,000 sq. ft. concrete deck of New York City's Pier 57 was done in record time with four Whiteman Power Buggies. The mixer trucks rolled right up to the edge of the pier and chuted the concrete directly into the Power Buggies which sped across portable timber runways at 16 mph to pour their loads quickly and accurately. Finishing operations were handled by Whiteman Floating-Finishing Machines.

According to the contractors,* "complete mechanization of concrete pouring and finishing greatly expedited the job and held costs to a minimum." Whiteman equipment can save time and money for you, too. Send coupon now for details.

*Merritt-Chapman & Scott Corp. and Corbetta Construction Co., joint-venture contractors. Whiteman equipment furnished by Contractors Supply Corp.

FLOATING & FINISHING MACHINES

# Whiteman

SCREEDING MACHINES

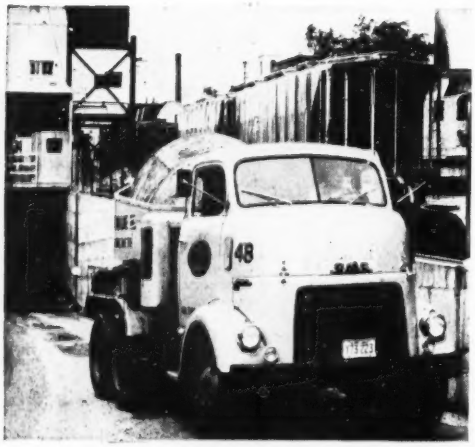
## THE LEADER IN CONCRETE EQUIPMENT

WHITEMAN MFG. CO., DEPT. C
3249 Casitas Ave., Los Angeles 39, Calif.
Please send prices, literature and name of distributor for ☐ Screeding Machines. ☐ Power Buggy ☐ Floating Finishing Machines.

Name _____
Firm _____
Address _____
City _____ Zone ____ State _____

**This GMC Model 450 dump** calls on an extra-heavy, ruggedly reinforced chassis to stand up under off-the-road strains like this — trip after trip, job after job. Extra-long, "pillow-action" springs cushion out shock. And this all-over stamina is backed by the extra power of GMC's great "302" engine — pound-for-pound the mightiest in gasoline truck history. It develops 7.2 to 1 extra-high compression—uses regular fuel.

# What Kind of Shape is This Truck In?



**A Turning Radius as short as 20 feet** makes GMC cab-over-engine trucks ideal for certain construction jobs that demand a lot of maneuvering in tight spots. Better weight distribution over the front axle allows for bigger loads within axle and legal limits. GMC c.o.e. models are available in 8 gasoline and Diesel models covering the 16,000 GVW-65,000 GCW field.

As you can see, the truck above seems to be wrenched out of line by its heavy load and the ragged footing.

But it isn't. That truck's still in top shape.

You see, it's a GMC. Its chassis is built to shrug off those murderous twisting strains—not just once, but job after job. Its extra-tough springs will cushion millions of jars and jolts before they're through. Its axles have strength to spare.

All this is teamed with GMC power that asks no smooth highway for its hustling action. "Impossible" rock pits, quagmires and mudholes are no barrier. A burly GMC engine demands no pampering—stays young *years* longer.

### A Cinch To Drive

A tough truck? Sure, but easy on drivers—and on itself. The comfortable "Six-Footer" cab is insulated from shock. Recirculating ball bearings take the strain out of steering. So maintenance needs are fewer—upkeep is lower.

But only your GMC dealer can give you the whole story. Why not drop in and find out *all* the advantages of using *a real* truck—a GMC!

GMC TRUCKS

GASOLINE 4,800 GVW to 90,000 GCW
DIESEL 19,500 GVW to 100,000 GCW

*GMC Truck & Coach Division of General Motors*

neering firms who are served by Barber-Greene.

**Euclid Road Machinery Co.:** John C. Dix has been appointed district manager for Euclid's operations in Georgia, Alabama, Florida and the eastern part of Tennessee. He will make his headquarters in Atlanta.

**Porter-Cable Machine Co.:** Has announced the opening of its eighth factory sales and service branch at 1712 S. Akard St., Dallas, Tex. Leonard P. Harvey is supervisor of the branch.

**Marlow Pumps:** William Maxwell has been appointed sales engineer for the company's New England territory succeeding William Van Blarcom, who was recently made general manager of the De Queen, Ark., plant.

**Galion Allsteel Body Co.:** Appointment of Robert R. Sheffer as regional sales manager in charge of the Ohio, West Virginia, Michigan, western Pennsylvania and western New York territory has been announced.

## In the Main Office

**Air Reduction Co., Inc.:** Howard H. Foster has been elected treasurer succeeding William Winters, Jr., who retired after more than 35 yr of service to the company.

**Flexible Steel Lacing Co.:** Milton B. Beach has been elected president and general manager.

## Special Mention

**Koehring Co.:** Has purchased Waterous Company, Ltd., Brantford, Ont., Canada. The new subsidiary will be known as Waterous Koehring Co., Ltd. E. O. Martinson will be general manager, and all Waterous personnel will remain in the business.

**Barber-Greene Co.:** Has opened its new factory and office facilities near Toronto, Ont., Canada. The new plant is operated by Barber-Greene Canada, Ltd., a subsidiary of the parent company. At present, it is engaged in the manufacture of belt conveyors. Expansion into other of the company's lines is contemplated for the future.

**American Bitumuls & Asphalt Co.:** Faster deliveries on all grades of asphalt for road, street, and highway construction are now being made to contractors throughout New York State from the new Lyons, N. Y. and Troy, N. Y. terminals of the company. From these two new locations, asphalts of various kinds are delivered hot directly into the contractor's truck, thus saving the cost of re-heating at the job-site. Facilities are provided for truck transport, rail or contractor's pick-up delivery.

**Oliver Corp.:** Announced today through its Farquhar Division in York, Pa., the completion of a manufacturing and merchandising agreement with the Stephens-Adamson Mfg. Co. of Canada, Ltd. Under the terms of the agreement Stephens-Adamson will manufacture and sell Farquhar conveyors in Canada.

**Richmond Screw Anchor Co., Inc.:** Announces the completion of its new branch factory in St. Joseph, Mo., to speed deliveries of Richmond products for the mid-west and far-west.

## Association Activities

**National Mineral Wool Assns.:** John W. Brown of Buffalo, N. Y., vice-president in charge of dealer sales of the National Gypsum Co., was elected president of the association at its annual meeting October 1.

**Portland Cement Assn.:** Donald H. Herak has been appointed district engineer of the Spokane (Wash.) office of the Association.

**Structural Clay Products Inst.:** The structural clay products industry will hold its annual convention at the Greenbrier, White Sulphur Springs, W. Va., from November 7 to 11. Meetings of both Structural Clay Products Institute and Structural Clay Products Research Foundation will be held during the 5-day meeting.


The manufacturers of Waterplug, Thoroseal, Quickseal

Introduce 3 NEW PRODUCTS

RED STAR
THOROLOK
Intended for asbestos shingles, on roof or exterior walls of your home or other building. THOROLOK is prepared in six beautiful pastel colors. Ask for Color Card 32-C.

BLUE STAR
THOROLOK
Prepared especially for basement floors which need protection and corrects unsightly appearance. Furnished in six beautiful colors. Ask for Color Card 32-C.

INVISIBLE
THOROCLEAR
Clear, water-repellent material for porous brick, stone, concrete, stucco, asbestos siding and shingles, interior plaster and masonry surfaces, where texture and color are to be retained.

NEW PROTECTION

*With addition of three newly-tested products to The THORO System, any type surface such as steel, wood, asbestos siding and shingles and every type masonry and stucco can be protected from excessive weathering, caused by rain and changing temperatures.*

"HOW TO DO IT"
Write for our pictorially described literature

Standard Dry Wall Products
NEW EAGLE, PENNSYLVANIA

## DRIVE FORM PINS

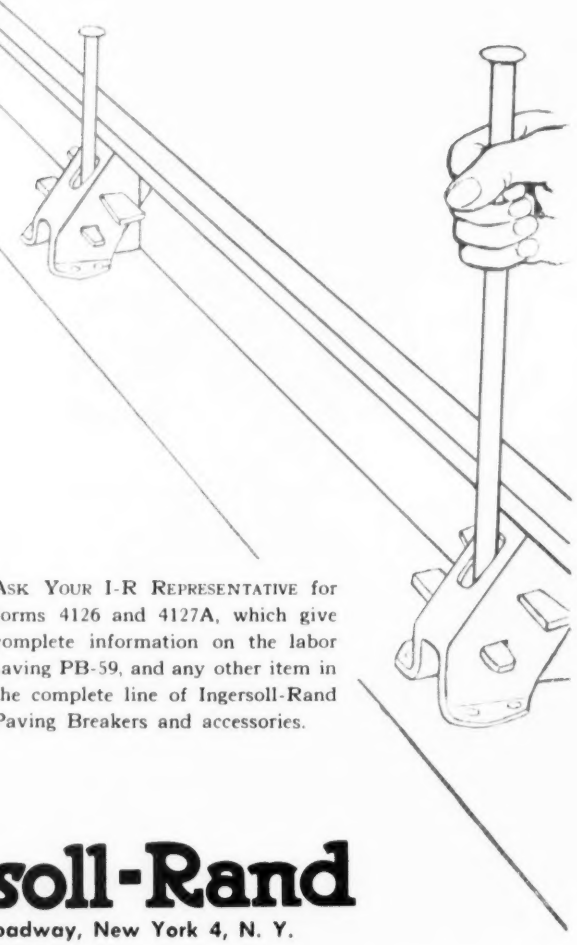
# as fast as you can set 'em!

*with this light-weight*

## *I-R Pin Driver*

THE INGERSOLL-RAND PB-59 Paving Breaker, equipped with a pin-driving fronthead, speeds up the driving of form pins on road building work at least four-to-one, as compared to any other method. One man with a PB-59 can keep up with the pin setter — driving the pins in from 5 to 10 seconds each. What's more, this air powered tool, weighing only 40 lbs. drives the pins straighter and tighter than could possibly be done by hand.

In addition the PB-59, with a Paving Breaker fronthead has the right combination of weight and power for a wide range of demolition, digging and backfill tamping jobs. Its light weight makes it ideal for use on scaffolding or on any job where an easy handling tool is important.



ASK YOUR I-R REPRESENTATIVE for forms 4126 and 4127A, which give complete information on the labor saving PB-59, and any other item in the complete line of Ingersoll-Rand Paving Breakers and accessories.

**Ingersoll-Rand**

11 Broadway, New York 4, N. Y.

953-5-A

CONDENSERS • GAS AND DIESEL ENGINES • TURBO-BLOWERS • ROCK DRILLS • COMPRESSORS • AIR AND ELECTRIC TOOLS

Standard 6" x 6"
Beam Type 14" x 4", and
J Head 14" x 4" available

# ACROW

## ADJUSTABLE STEEL SHORES

*Fast 1,2,3, and they're up...*

The flexibility of ACROW'S flat-type head lends itself to any size stringer—no redesigning of formwork necessary to fit shore heads, as is required with head types of limited adaptability.

- One Man Does the Work of 2
- Micro-fine, Positive Adjustment Working Ranges From 3'4"—15'
- Safe Working Load Fully Established and Guaranteed
- No Extra Attachments Required for Operation—Self Contained Unit
- Practically Indestructible—All Steel

**ACROW—*The World's Largest Selling Shore—Over 1,000,000 Now in Use***

UNITED STATES OFFICES

| | |
|---|---|
| Chicago, Michigan 3-1010 | Houston, Underwood 8514 |
| New York, LExington 2-7596 | Dallas, Riverside 6081 |
| Boston, DEvonshire 8-7174 | Birmingham, 7-8151 |
| Philadelphia, LOcust 7-8583 | Los Angeles, DAvenport 6-1491 |
| Atlanta, Emerson 3716 | San Francisco, ATwater 2-1443 |

**ACROW, INC.,** Dept. CM-11
510 North Dearborn Street, Chicago 10, Ill.
Gentlemen: Please send me the following Bulletins (Please Check)

☐ Acrow Shores ☐ Column Clamps ☐ Trench Jacks

Name .....
Company .....
Address .....
City ..... Zone ..... State .....

ASSOCIATE COMPANIES

Acrow (Canada) Ltd., Montreal
Acrow Venezuela S. A., Caracas
Acrow Brazil S. A., Rio de Janeiro
Acrow Uruguay S. A., Montevideo
Acrow Argentina S. A., Buenos Aires
Acrow Peru S. A. (Ingenieros), Lima
Acrow (Engrs.) Ltd., London
Acrow Engrs. (Pty.) Ltd., Johannesburg
Acrow Engrs. (Pty.) Ltd., Sydney

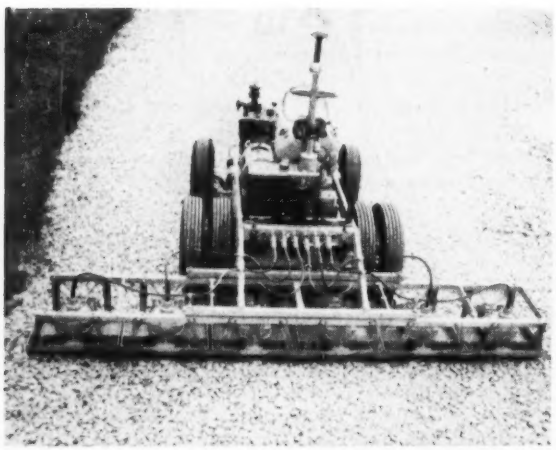
# CONSTRUCTION EQUIPMENT NEWS

## Step-A-Time Scaffold Bracket

The Step-A-Time scaffold bracket is claimed to be a time and money saver on many types of light construction and maintenance work. Erection can be made by one man. The brackets are made of steel with angle braces welded to the frame. Hanger gussets are attached at any convenient location and lock ladders in place. A wooden stage, laid between ladder rungs, gives an easily adjustable working platform.—**Beaver Art Metal Corp., Elwood City, Pa.**

## Tilt-Up Brace with Pivot

Designed for fast and efficient positioning and adjusting of precast panels, this new Superior slab brace has pivoting action. It is used with 2x4's or 2x6's of standard length to fit individual jobs. It is also available with fittings for use with pipe



## Compactor for Macadam Construction

On macadam base work, this machine in one pass will sufficiently compact 12 in. of rock to support smooth rollers. The rig consists of suspension of individual Jackson Vibratory Compactors. Working speeds from 0 to 60 ft per min are said to be ideal speeds. Width of machine is 13 ft 3 in.—**Jackson Vibrators, Inc., Ludington, Mich.**

## Hydraulic Powered Truck Tailgate

This all-hydraulic tailgate unit can be mounted on any truck and can lift a maximum 2,000-lb payload. One man can handle heavy or bulky objects with safety and little strain. Two platforms are available: a ramp type and platform or square edge type. A power take-off on the truck mechanism provides the power. —**The Heil Co., Milwaukee, Wis.**

# On-the-Job Previews of Machinery, Tools and Equipment

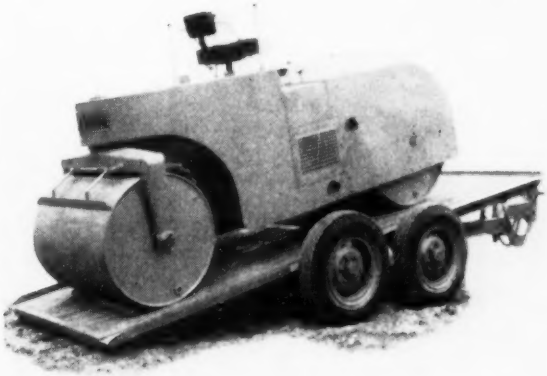
instead of lumber. The manufacturer claims all makeshift methods are eliminated with this brace. Write for 4-p Bulletin TU-2 for more details.—**Superior Concrete Accessories, Inc., 4110 Wrightwood Ave., Chicago 39, Ill.**

## Kenworth 801 Earthmovers

A fleet of Kenworth 801 end-dump trucks is being used on Vermillion Valley hydroelectric project in California. These trucks are powered with Cummins NHID-600 engines and have a struck capacity of 12 cu yd, and 14 cu yd heaped. They are also equipped with Fuller Model 10-F-1220 unit mounted transmissions. They are being loaded by one Manitowoc and one Northwest shovel. Haul lengths are up to 4,000 ft with 15% grades.—**Kenworth Motor Truck Corp., 8801 E .Marginal Way, Seattle.**

## Plastic Stripping for Prestressed Units

Here is a method of preventing bond between the wire groups used in post tensioned prestressed construction units. The group of wires is coated with heavy grease and wrapped with Aeroflex V plastic stripping. The wrapped wire groups are then placed in the forms, concrete poured and the wires stressed.—**Anchor Plastics Co., Inc., 36-36 36th St., Long Island City, N. Y.**



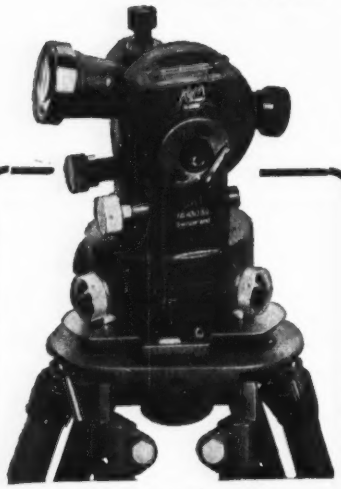
## Heavy Duty Trailers

Two new heavy-duty trailers, Models T08-14 and T08-18, are tow type, tilt-top units with Tandem axles and single wheels in-line. Model T08-14 has a 14-ft platform length, 8 to 10-ton capacity. Model T08-18 has an 18-ft platform length, 8 to 10-ton capacity. Units have automatic safety locks for securing platform.—**Transport Trailers, Inc., Cedar Rapids, Iowa.**

PRECISION . . .
IN THE PALM
OF YOUR

HAND!

Kern
AARAU



So tiny it hides beneath your finger . . . the miniature watch of today is the final result of generations of study, lifetimes of devotion and craftsmanship.

THE TINY DK1

A superb example of precision and ultimate compactness, for construction site work and land improvement. The DK1 Theodolite stands only 5½" tall, weighs an unbelievable four pounds! Almost small enough to carry in your pocket, the DK1 is a magnificent example of functional perfection . . . offering the maximum in efficiency, exactness and performance . . . the absolute minimum in size.

WRITE TODAY!

See the complete line of Kern Surveying Instruments. Write today for our new, fully illustrated catalogue.

*Complete Service Department*
*Factory Trained Personnel*

**Kern Surveying Instrument Division**

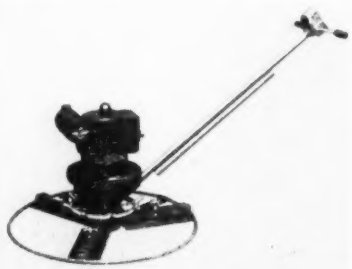
**PAUL REINHART CO., INC.**

**70 Beaver Street, New York City**


## EQUIPMENT NEWS . . . Cont'd

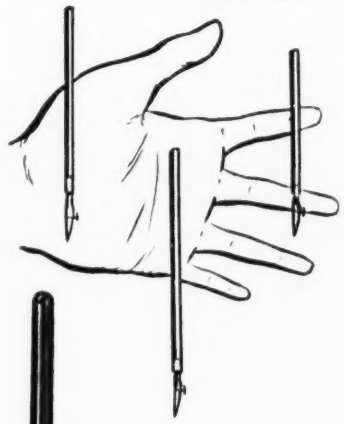
**NEW AIR-COOLED ENGINE**—A new 6½-hp, air-cooled engine is now in production by Kohler Co. Called the K160, it delivers maximum horsepower at 3,600 rpm and weighs only 67 lb. Of the single cylinder variety, the engine comes equipped with oil bath air cleaner, ball bearings, fly-ball governor, fuel filter, rotating grass screen, silencer muffler and a 1¼-gal fuel tank.—**Kohler Co., Kohler, Wis.**

**HEAVY-DUTY LUBRICANT**—A new heavy-duty lubricant compounded to meet special needs where excessive heat is a problem is designed around an unusually heavy base oil and improved Lithium stearate. Said to combine superior wear resistance with the ability to perform efficiently at extreme temperatures. Especially recommended for shovel operations.—**D-A Lubricant Co., Indianapolis 23, Ind.**



**NEW POWER TROWEL**—The Mall Tool Co.'s new model TG-4 Pow'r Trow'l, claimed to be the quickest and most efficient troweling for both floating and finishing work, comes equipped with 14-in. tool steel finishing trowels set in 34-in. dia ring. Available at extra charge are the 18-in. floating trowels. Set in a 48-in. ring, these drive out air pockets, bring up moisture and large aggregates to provide a uniform durable surface with good traction. Unit is powered by a 1-cyl, 4-cycle, air-cooled gasoline engine. Weight, 122 lb.—**Mall Tool Co., 7725 S. Chicago Ave., Chicago 19, Ill.**


FOR THE
HAND OF A
MASTER!



Kern
AARAU

Model 1003

Within the complete Kern line you'll find a drawing pen designed to fit just *your* hand . . . engineered to adjust to just *your* grip . . . made for YOU. Carefully designed for greatest possible ink capacity . . . hand sharpened for crisp, exact unbroken lines . . . the Kern pen is your assurance of a far easier job . . . far more comfortable work.

DETAIL PERFECT

Almost a century and a half of study, constant improvement and devotion goes into every Kern drawing instrument. Unquestionably the finest product of its kind made today, your Kern instrument is worthy of the hand of a master . . . perfect for the fingers of the novice!

WRITE FOR DETAILS

Our new catalogue of sets and individual pieces is ready now. Set prices range from $15 to $100. The drawing pen pictured, is $2.20. Write for your FREE copy today!

*At your nearest dealer, or*
*write Dept. CM*

**Kern Drawing Instrument Division**

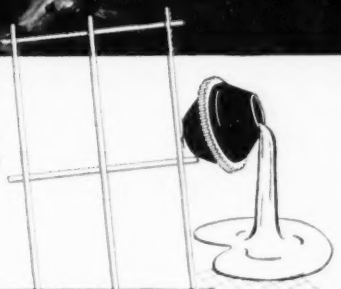
**BORDEN & RILEY PAPER COMPANY**

**60 E. 11 Street, New York City**

# Get a Jump on the Weather...
## *order your Wire Fabric now!*

### WHY IT PAYS TO USE AMERICAN WELDED WIRE FABRIC

- it is prefabricated and provides a stronger concrete slab than ordinary types of reinforcement.
- it gives better crack control.
- it is easier to install.
- it takes less steel.



When the thaw comes next spring, you want to be ready to dig in *at once* on all important construction jobs. And you will need plenty of concrete reinforcing material on hand ready for immediate use. The best way to be sure of having enough is to anticipate your needs—stock up *now* on the sizes and types of American Welded Wire Fabric that you will use. Then, even if there is an early thaw, you will be ready with an adequate supply of the best available concrete reinforcement.

Any concrete pavement—super highway, rural road, or city street—is stronger and more durable when reinforced with American Welded Wire Fabric. Get your supply early . . . call you local distributor today.

AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL CORPORATION, GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS • UNITED STATES STEEL EXPORT COMPANY, NEW YORK

**EVERY TYPE OF REINFORCED CONCRETE CONSTRUCTION NEEDS**

# U·S·S AMERICAN WELDED WIRE FABRIC

**UNITED STATES STEEL**

Crane operator keeps aware of job situation—gets swift instructions by 2-way Radio.

# You'll Cut Costs... Bid Low... Speed Construction with Motorola 2-way Radio

Whether you're building a dam or a multi-story building, you'll do a *better, faster* job with Motorola 2-way Radio. Instant communications keeps men and machines working, eliminates lost time and mileage, reports breakdowns as soon as they occur. Motorola systems pay for themselves many times over in a short time.

Motorola gives you eight exclusive improvements for top performance and durability. The "Permakay" wave filter eliminates 15 nuisance tuning adjustments. Lowest overall maintenance costs and obsolescence-proof design makes Motorola your best value.

Let a friendly Motorola engineer in your vicinity give you the complete, money-saving story.

**Write today to Dept. 2286-CM.**

**Central Control Console** gets men and machines on the job quickly. Keeps supplies rolling, saves time and mileage through instant control of operations.

**Motorola . . . Specialists and Leaders in 2-way Radio**

*2-way Radio*

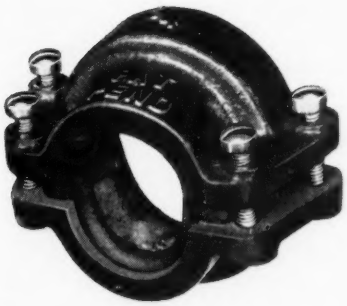
**Motorola**

**Communications & Electronics, Inc.**

A SUBSIDIARY OF MOTOROLA, INC.

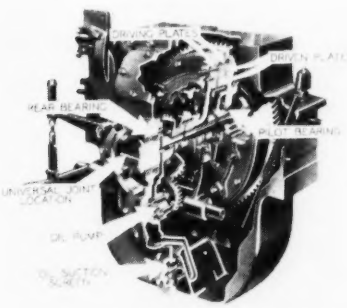
**900 N. Kilbourn Ave., Chicago 51, Illinois • Rogers Majestic Electronics Ltd., Toronto, Canada**

WHEN ANSWERING THIS ADVERTISEMENT, PLEASE REFER TO "ITEM 5355"



**SEAL FOR PIPE LEAKS**—The Bel Connector is a cast-iron fitting that employs a sound engineering principle to seal pipe leaks quickly, safely and without cutting off flow in the system. It is designed to enclose the leak within captive Neoprene gaskets when the screws are tightened around the pipe. The sealing gaskets thus form a gas-tight chamber which equalizes pressures inside the pipe and out. All the contact of the device and fittings are on Neoprene, so the joint will withstand intense vibration without leaks or damage. **—Holoal Mfg. Corp., P. O. Box 95, Bellerose 26, N. Y.**

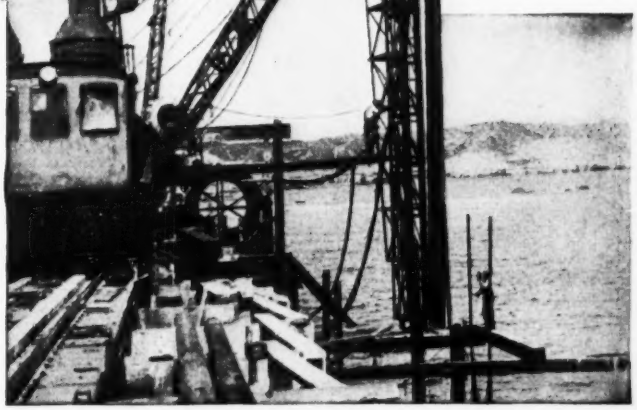
**IMPROVED ROLLER** — The improved Bros Pneumatic Tire Rollers now have new, wide face tires at no extra cost. According to the manufacturer, the new tires permit full compaction on every pass, eliminating any shifting of voids and low spots and the building of ridges and lines. The king-pin design has been improved so that the towing tongues float more freely. Drawbar hook-ups can be made quickly at any height. **—Wm. Bros Boiler & Mfg. Co., Minneapolis 14, Minn.**




**OIL-TYPE CLUTCH** — Standard equipment on the Cat D8, D6 and No. 6 Shovel is a new oil-type flywheel clutch claimed to operate two to four times longer than an equivalent dry clutch before major adjustment or overhaul is necessary. An innovation being introduced with this clutch is a universal joint which eliminates the need for close alignment between the clutch and transmission.—**Caterpillar Tractor Co., Peoria, Ill.**

# THIS *Washerless* COUPLING

***has no equal*** for convenience, efficiency and durability in every high or low pressure hose service . . . steam, gas, air, water, hydraulic.



# "GJ-BOSS" *Ground Joint Female Coupling*, STYLE X-34

The original ***washerless*** hose coupling, with a reputation for safe, reliable service under hard use and rough handling. Ground joint union between stem and spud provides leakproof, trouble-free seal. All parts malleable iron or steel, rustproofed. Furnished with "Boss" Offset and Interlocking Clamps. Sizes ¼" to 6", inclusive.

*Stocked by Manufacturers and Distributors of Mechanical Rubber Goods*

**DIXON** *Valve & Coupling Co.*

GENERAL OFFICES & FACTORY—PHILADELPHIA 22, PA. BRANCHES—CHICAGO
BIRMINGHAM • LOS ANGELES • HOUSTON • DIXON VALVE & COUPLING CO., LTD., TORONTO
ASSOCIATE COMPANIES—BUCK IRON COMPANY, INC., QUARRYVILLE, PA. • PRECISION DRAWN STEEL COMPANY, CAMDEN, N. J.

# WELLMAN *Williams Type*

## PERFORATED DRAGLINE BUCKET

### *speeds the wet jobs*

• You get big loads fast with this Wellman Perforated Dragline Bucket because excess water goes out while gravel stays in on jobs such as illustrated.

Built of special alloy steel—all welded for strength plus light weight. You can work faster with less maintenance with Wellman dragline buckets.

***Want Facts?***

*Write for free descriptive bulletins.*

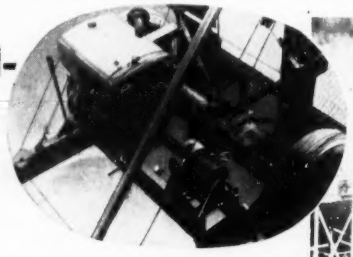
**Dragline, Clamshell, Custom-Built Buckets, Stone and Wood Grabs.**

**THE WELLMAN ENGINEERING COMPANY**

**7000 Central Avenue**

**Cleveland 4, Ohio**

# WISCONSIN-POWERED *BUCK HOIST*



### *Lifts 20 Cubic Yards per Hour*

Here's another typical Wisconsin Heavy-Duty Air-Cooled Engine construction application . . . hoisting concrete for the new Chemistry Building at Xavier University, Cincinnati, O. A Model TE 2-cylinder Wisconsin Air-Cooled Power Unit handles the load, delivering up to 20 cu. yds. of concrete per hr. with a ½ yd. self-dumping bucket (dumping here at the 56 ft. level).

In addition, the tower is self-erecting up to 40 ft. according to the manufacturer, Buck Equipment Corporation, Cincinnati 2, Ohio.

The construction contractor reports that the rig works equally well bringing up bricks, cut stone, reinforcing rods, steel beams and other materials. All of which calls for HEAVY-DUTY DEPENDABILITY from the Power Unit.

Wisconsin Engine features such as tapered roller bearings at both ends of the crankshaft, gear-driven high tension outside magneto, positive AIR-COOLING and lubrication contribute to all-around dependability and peak performance, day-in and day-out.

You can't go wrong when you specify Wisconsin Air-Cooled Engine Power for your equipment.

**Power TO FIT THE JOB**

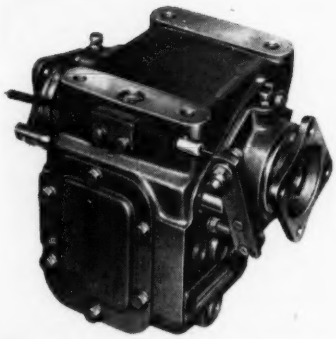
**Power TO FIT THE MACHINE**

MOST H.P. HOURS

**WISCONSIN MOTOR CORPORATION**

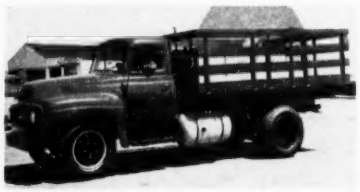
*World's Largest Builders of Heavy-Duty Air-Cooled Engines*

**MILWAUKEE 46, WISCONSIN**

**TRANSMISSION FOR SMALL TRUCKS**—Called the Brownie Junior, a new two-speed auxiliary transmission, available either as an overdrive or underdrive for light-duty and pick-up trucks, has just been announced. Complete installation kits with instructions are available for all popular truck makes.—**H. S. Watson Co., Emeryville, Calif.**

**ADJUSTABLE DRILL** — Here's a design of drill that has an adjustable cutting diameter of 1 in. One set of blades will cut from 2 to 3 in. and another set will cut from 3 to 4 in. The illustration shows one drill in its extreme extended position and another with smaller blades in its extreme contracted position.—**Hayden Twist Drill Co., 8626 Lyndon Ave., Detroit, Mich.**



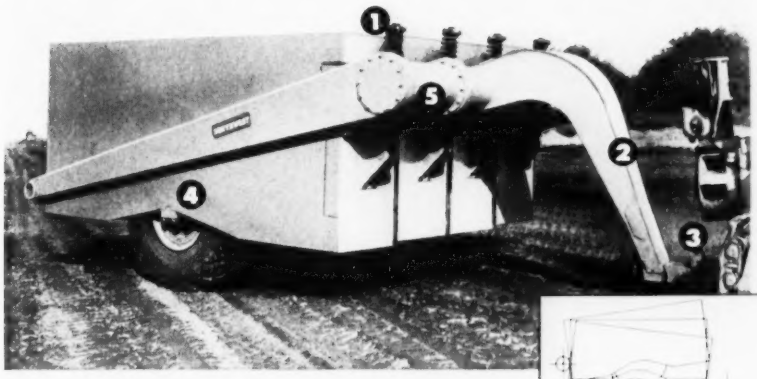
**NEW FUEL SYSTEMS**—International Harvester Co is now producing five medium-duty model trucks with liquefied petroleum gas fuel systems. Gross vehicle weights range from 14,000 to 17,000 lb. Engine is 108-hp. valve-in-head International Silver Diamond 240. Chief advantage of this type of fuel appears to be the lower cost than gasoline.—**International Harvester Co., 180 N. Michigan Ave., Chicago, Ill.**

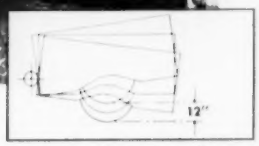
STUDY AND COMPARE THESE

# Southwest FEATURES

## COMPACTION ROLLER

1. Greater wheel oscillating freedom with each wheel mounted in independent weight box unit.
2. Heavy duty, reinforced gooseneck and sectionalized hauling yoke.
3. Swivel hitch with Timken roller thrust bearing.
4. Each wheel equipped with two large Timken bearings.
5. Sectionalized hauling yoke permits use of 3 to 6 wheel units.




Closely spaced wheels oscillate independently and each wheel has an up and down movement of 12 inches.

## Compaction roller

## TAMPING ROLLER

A. Full oscillating double drums.

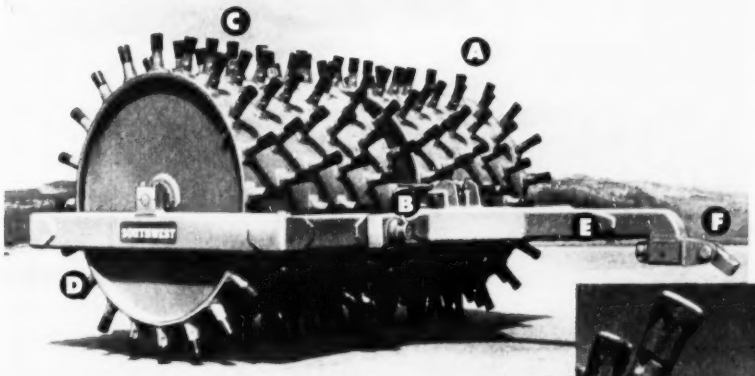
B. Timken roller thrust bearing at oscillating pins.

C. Two-piece foot with replaceable tips—permits changing size or replacing tip in the field without welding.

D. One-inch steel drum shell.

E. Heavy duty, reinforced box steel frame.

F. Large swivel hitch with Timken roller thrust bearing.



Simply drive off the old tips and drive on the new tips on the job—no welding required.

## Tamping roller

*WRITE TODAY* for illustrated folders giving complete data and specifications.

**Southwest Welding & Manufacturing Co.**

CONSTRUCTION MACHINERY DIVISION

ALHAMBRA, CALIFORNIA

**$105-MILLION WORTH OF CONSTRUCTION** in 20 cities is the mythical "Turner City." On each job, Turner Construction Co. had to assemble the right combination of its 550-man supervisory staff, select the right group of subcontractors, and make sure that the correct materials, construction equipment and installed equipment were on the spot at the right time. To help them do their job better, Turner men read METHODS. To sell these important buyers, advertise in METHODS.

# TURNER CITY: 5½-million sq. ft. of floor space in 20 cities, ten states, in one year.

**"Turner City-1952"** is a composite of 37 buildings—in 20 cities and 10 states—built by Turner Construction Company (New York, N. Y.) during 1952. Costing $105,061,218, the projects total 5,555,583 square feet of floor space—more than 127 acres.

In the past five years, Turner has completed $440,000,000 worth of new construction. Of this, $40-million went for direct purchase of materials and $300-million was subcontracted to specialty contractors guided and controlled by Turner's 550-man supervisory staff. Turner's men hold "yes" or "no" power over most of the materials and some of the operating equipment bought and used by these subcontractors. Last year Turner's home and regional purchasing departments spent more than $10,000,000 for *direct* purchases.

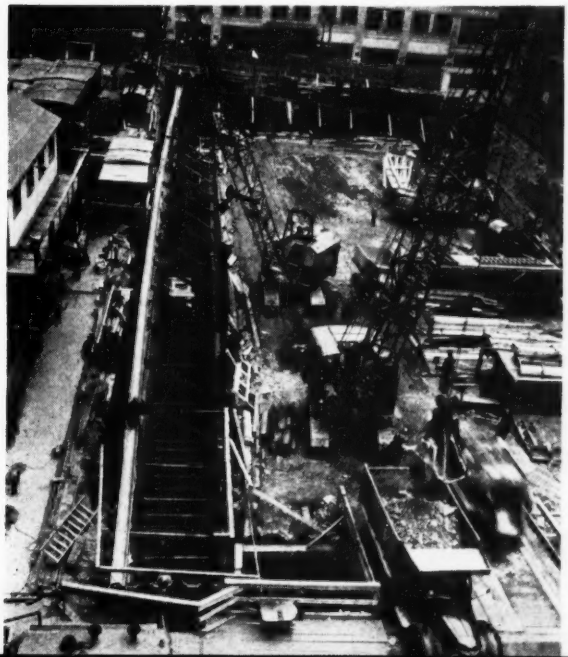
Keeping track of the comings and goings of buying influences as they move around Turner's regional offices and projects all over the country, is a tough job for any sales staff. It's a matter of being in the right place, at the right time, with the right man. You can add 45 persistent salesmen who *do* get around at Turner by placing your advertising in METHODS. Each month, 45 copies of METHODS go to Turner employees in all ten states where work was handled in 1952. They reach engineers, superintendents, foremen, vice presidents, project managers, craftsmen—men who are constantly making "yes" and "no" decisions on equipment and materials.

Contractors are a big and expanding market. If you want to sell to contractors, advertise consistently in Construction Methods & Equipment.

**TURNER BUYS MATERIAL** and controls erection and installation of reinforced steel, masonry, steel sash, lumber, millwork, cabinet work, hardware and all the many other ingredients of a modern building. Above, 525 Wm. Penn Place Building in Pittsburgh required 17,000 tons of structural steel, 550 tons of reinforcing steel, 645 tons of sheet piling and 662,000 sq ft of steel floor paneling. Foundation (below) took 17,000 cu yds of concrete. This is part of $10-million spent directly by Turner on materials last year.

•

Four transit mixers, two cranes, two trucks are shown excavating 60,000 cu yds of earth and pouring deep foundation piers. On this job, foundation subcontractor, to whom equipment belongs, gets 8 copies of METHODS each month, foundation designers get three.



**BEER VATS** in Newark brewery built by Turner show wide range of construction activity of the company. Following important buying influences as they move from job to job, in many industries, many locations is tough sales problem. METHODS *paid* circulation reaches your contractor customers no matter where they are.

**MUTUAL LIFE INSURANCE** building in New York City required 2400 cu yds concrete, 82 tons reinforcing steel in foundations alone. Vault required additional 160 cu yds concrete, 105 tons reinforced steel. Turner's headquarters in New York sets general purchasing policy for all district offices. METHODS carries your sales story to 45 important Turner men in both headquarters and districts.

**$500,000 IN EQUIPMENT** owned by Turner is stored, maintained and repaired in its own shop employing 32 people. Like many contractors, Turner does all its own maintenance. That's why METHODS features maintenance and repair articles regularly. Equipment, like materials, is bought through central purchasing departments in each territory.

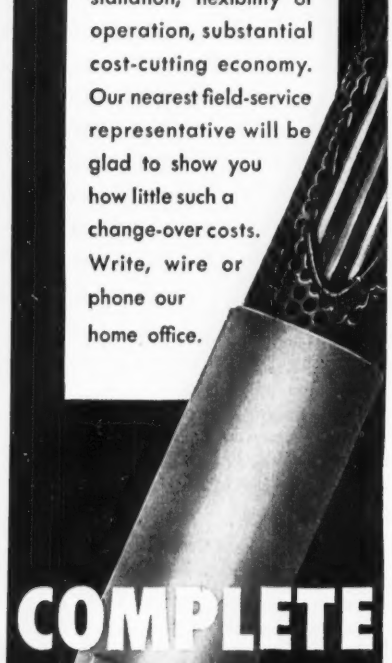
**Turner Construction Company is only one of 7,420 contracting firms who handled more than $100,000 in new business last year. With each firm you face this same sales problem of many highly mobile buying influences. And with construction increasing, the task of reaching all these buying influences is increasing. Keep up with the buyers in this *growing* market by using the *growing* publication—**

# CONSTRUCTION
## METHODS AND EQUIPMENT

A McGRAW-HILL PUBLICATION
330 WEST 42nd STREET, NEW YORK 36, N.Y.

## HOW TO BRING YOUR DE-WATERING SYSTEM UP TO DATE!

Replace your old points with a complete set of "complete" patented fluted tube wellpoints. You will note the higher efficiency and performance of the system on your next dewatering operation. Exclusive design, removes more water in less time . . . Offer many other exclusive advantages in speed of installation, flexibility of operation, substantial cost-cutting economy. Our nearest field-service representative will be glad to show you how little such a change-over costs. Write, wire or phone our home office.

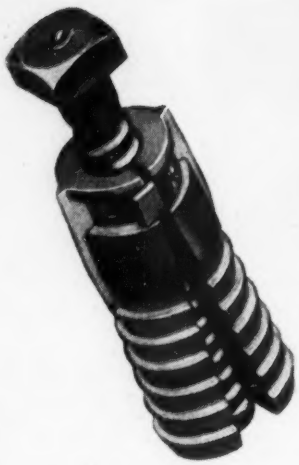


**COMPLETE**

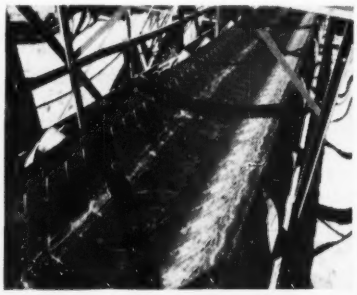
**MACHINERY & EQUIPMENT COMPANY, INC.**

36-40 11th Street

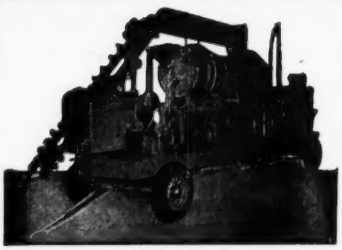
Long Island City, New York

**LAG SHIELDS**—Ideal for all masonry fastening, a new lag shield is completely rustproof and precision cast from a durable alloy. Horizontal fins prevent shields from turning in the hole, and the tapered outside rings have tremendous holding power. Made in a standard range from ½ to ¾ in.—**The Rawlplug Co., Inc., 271 Church St., New York 13, N. Y.**



**WILL SHED OR RETAIN WATER**—A rubber conveyor belt made with a surface that sheds or retains water is now helping in the production of taconite. The belt automatically dewaters finely ground taconite as it conveys the wet material from storage tanks for processing. A simple adjustment makes the belt retain water with equal ease. Called the "Riffle Grip," the secret of the belt's dual performance lies in its unique cover design. Molded rubber ridges which stand ⅛ in. high are formed in a continuous series of chevron patterns spaced several inches apart. Operating on a predetermined conveyor incline angle, with belt idlers also placed at a specified angle, the chevron-like ridges channel water to the edges of the belt where it flows off. Adjustment of the conveyor incline angle and the angle of belt idlers changes the chevron patterned surface into a series of horizontal carrying ribs which retain water on the belt and permit even distribution of moisture throughout the material.—**B. F. Goodrich, Akron, Ohio**

## ASPHALT PLANTS

**Complete units for maintenance and moderate contract paving. Sizes—4, 8, 15, 30 tons per hour.**

*Other Products*

**CONCRETE VIBRATORS**
*Gasoline Engine and Electric Motor Driven Models*

**HEATING KETTLES**
*for Asphalt and Tar*

**AGGREGATE DRYERS**
*for Stone and Sand*

**FRONT END LOADERS**
*for Industrial Tractors*

***WRITE FOR CIRCULARS***

White Mfg. Co.

**ELKHART 6** **INDIANA**

## NOW a New principle in REWIND STARTERS

This amazing new Armstrong Starter is packed with important new features — It is 50% lighter — smoother acting — easier to service and mount.
The principle is based on the use of friction inside a conventional rope starter cup. Actuated by a cam principle it engages after ¼ inch pull. Eliminates danger of teeth or pawls breaking — permits greater tolerances in mounting. Available with stationary or rotating screen. Competitively priced.

**ARMSTRONG BULLDOG STARTER**
*HERE'S HOW IT WORKS*

1. Cam actuated teeth extend to grip inside of standard rope pulley cup.

2. Spring loading retracts teeth when pull stops.

3. Rope pulley available for hand starting in case of emergency.

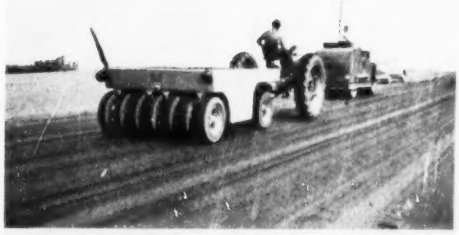
If you make, sell or use products like **Chains Saws • Pumps • Power Mowers • Outboard Motors**, you can reduce weight — improve starting — increase starter life.

4. Heart of unit can be incorporated in end products design.

**ARMSTRONG PRODUCTS CO.**
**Milwaukee, Wis.**

# Building an ASPHALT highway by the "stage construction" method

South Dakota State Highway near Faulkton, after 10 year old road-mixed Asphalt surface had been resurfaced with hot-mix Texaco Asphaltic Concrete.



Spreading and compacting the new plant-mixed Texaco Asphaltic Concrete pavement, constructed by Megarry Brothers of St. Cloud, Minn.

South Dakota employed the "stage construction" method in improving this 16-mile section of State Highway with Asphalt. The first step was taken 10 years ago, when a Slow-curing Asphaltic Oil and crushed gravel were road-mixed on the highway to provide a smooth, dustless, all-weather riding surface 4 inches thick.

In 1952, after it had served traffic satisfactorily for a number of years, the road-mixed Asphalt surface provided the State with an excellent base for a heavy-duty Texaco Asphalt pavement of the plant-mixed type. The new pavement consisted of a 1-inch leveling course, spread by blade grader, and a 1½-inch wearing surface, laid by mechanical paver. A seal coat of Texaco Rapid-curing Cutback Asphalt, covered with crushed gravel, completed the pavement.

Improvement of a highway with Texaco Asphalt products by the "stage construction" method enables the road builder to keep pace with the demands of increasing traffic, while spreading costs over a number of years.

Texaco Asphalt Cements, Cutback Asphalts and Slow-curing Asphaltic Oils offer the public official a wide choice of improvements for his streets or highways. Helpful information about all of these types is presented in two booklets, which you can secure with no obligation by writing our nearest office.

THE TEXAS COMPANY, Asphalt Sales Dept., 135 E. 42nd Street, New York City 17

Boston 16 • Chicago 4 • Denver 1 • Houston 1 • Jacksonville 2 • Minneapolis 3 • Philadelphia 2 • Richmond 19

TEXACO

# TEXACO ASPHALT

# See it Saw

**Don't buy any chain saw until you see a DISSTON demonstration**

***New***

## LOW PRICES!

**ON ALL DO-101 MODELS**

***SEE* the dual-purpose**

## DISSTON DO-101

***with Mercury Gasoline Engine***

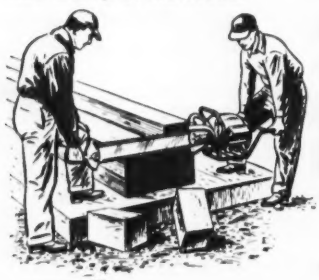
*Most dependable, lightweight 1-man or 2-man saw*

***SEE this amazing saw in action . . .*** you'll find it hard to believe! A smooth-running powerhouse that cuts tough timbers and logs in seconds. Compact, precision-built Mercury Gasoline Engine keeps it running all day every day.

***SEE the many cutting attachments,*** including: Spee-D-Tach tailstock for quick conversion to 2-man use. A choice of seven rail lengths from 18" to 40".

***SEE the new 16" "Free-End" bow saw*** with DF chain. Perfect for fast bucking and limbing. Taper ground rail eliminates binding.

*"The Champ of the Woods"*



***SEE* the smooth-running**

## DISSTON DA-211

***with 9 h.p. Mercury Engine***

*"The Champ of the Woods"*

***SEE this rugged, reliable worksaver*** cut and you'll agree there's no job too tough for it! So expertly designed and built it runs at top speed without vibration or chatter.

***SEE why it's the undisputed leader*** for heavy work, high production, low-cost cutting.

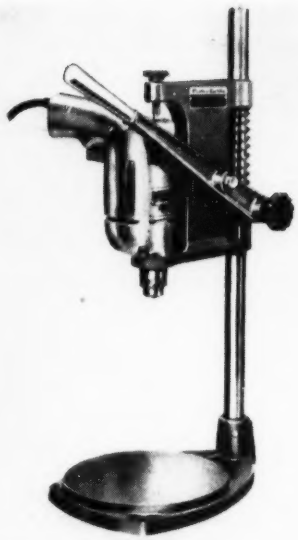
***SEE the attachments available*** which extend the saw's usefulness, including narrow profile guide rails up to seven feet long and 25" Bow Saw attachment.

***FREE*** Illustrated 32-page booklet "How to Make Money and Cut Costs with Chain Saws." Write today.

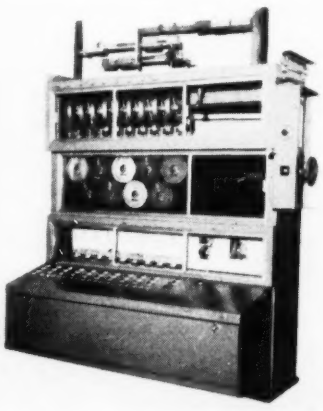
***SEE* these great saws in action**
**Ask your dealer for a demonstration today!**

**HENRY DISSTON & SONS, INC.**
**18E Tacony, Philadelphia 35, Pa., U.S.A.**

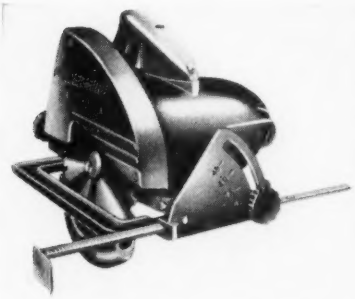
*Branches on the West Coast:* 1555 Fourth Ave., Seattle 14, Wash. • 635 N.W. 16th Ave., Portland, Ore.
*In Canada:* 2-20 Fraser Ave., Toronto 3, Ont.

**DRILL STAND**—Weighing only 6 lb is this new vertical drill stand, Model 5009, to which a portable drill can be attached or removed in a matter of seconds without tools. Clearance between end of drill and base is 7 in. Clearance between center line of column and bit is 5⅜ in. Height of stand is 21 in.—**Porter-Cable Machine Co., Syracuse 3, N. Y.**

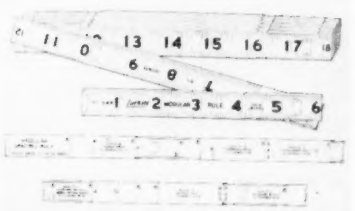


**PUSH-BUTTON MIX CONTROL**—A new high in flexibility of concrete-mixing operations has been reached with development of the new 120 Mix Selector consisting of a push-button control panel which enables the operator to produce 120 different sizes and type batches of aggregate and cement, five times the selection ability of any previous model. The 120's mix selection mechanism is electrically controlled and is installed under the C. S. Johnson Co. multiple compartment aggregate and cement bin. A mix number indicating wheel and a hand wheel located on the right-hand side of the control cabinet are the added control devices which make the various "mix" selection possible.—**C. S. Johnson Co., Champaign, Ill.**

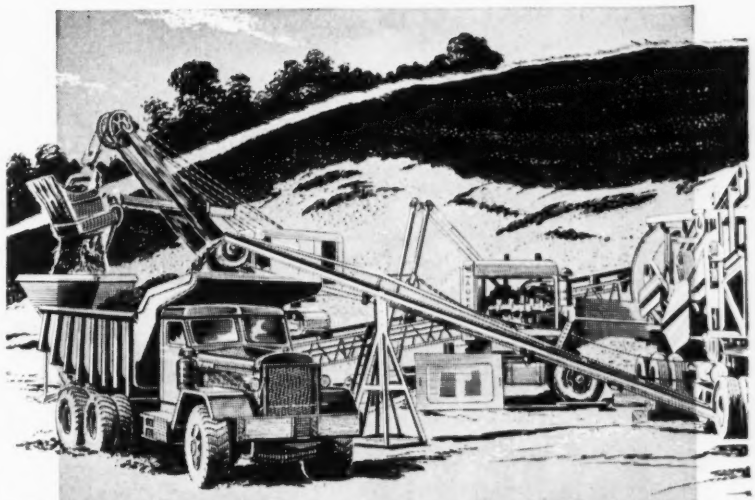


**NEW COMPANY—NEW SAW**—Power-guide, a brand-new portable lightweight saw that can cut a wide variety of materials, has an air-cooled motor in an aluminum housing that delivers 1 hp under peak load and has a full 7-in. blade. Unit carries a one-year factory guarantee. It will mitre a 2-in. plank at 45 deg and has a shoe adjustment for slotting from ¼ to 2 7/16 in. deep.—**Ram Tool Corp., 411 N. Claremont Ave., Chicago, Ill.**

**MULTI-PURPOSE HAND TOOL**—A new multi-purpose hand tool, called the Kumalong, is a tool for working concrete, cement, gravel, rock, sand and loose dirt, as well as for spreading asphalt blacktop. Made of 14-gage cold-rolled steel, the 20x4-in. blade with ferrule is fitted to a long 54-in. handle. Additional information can be obtained from **Lasker Handozer Co., 3710 Warwick, Kansas City, Mo.**



**SPACING RULE**—The new Lufkin mason's modular spacing rule No. 646 is said to give faster and more accurate work. A given size modular brick is always laid the same number of courses in 16 in. with a specified joint thickness. One side of this new rule is marked with a 16-in. repeating series of numbers that show the vertical coursing for the following modular masonry units: concrete block and glass bricks, facing tile, economy brick and small facing tile, engineered brick, standard and Roman brick. The first section is 4 in. long, which permits butting the rule on the first 16-in. module. As all other sections are an even 6 in. long, the rule can also be used for spacing 6- and 12-in. glass blocks. This new rule is an addition to the Lufkin line of Red End folding wood rules. **—The Lufkin Rule Co., Saginaw, Mich.**

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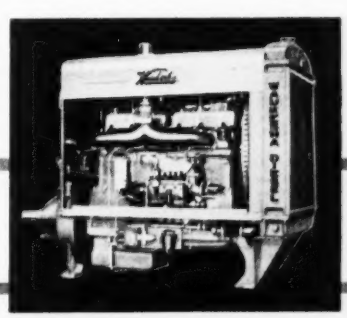

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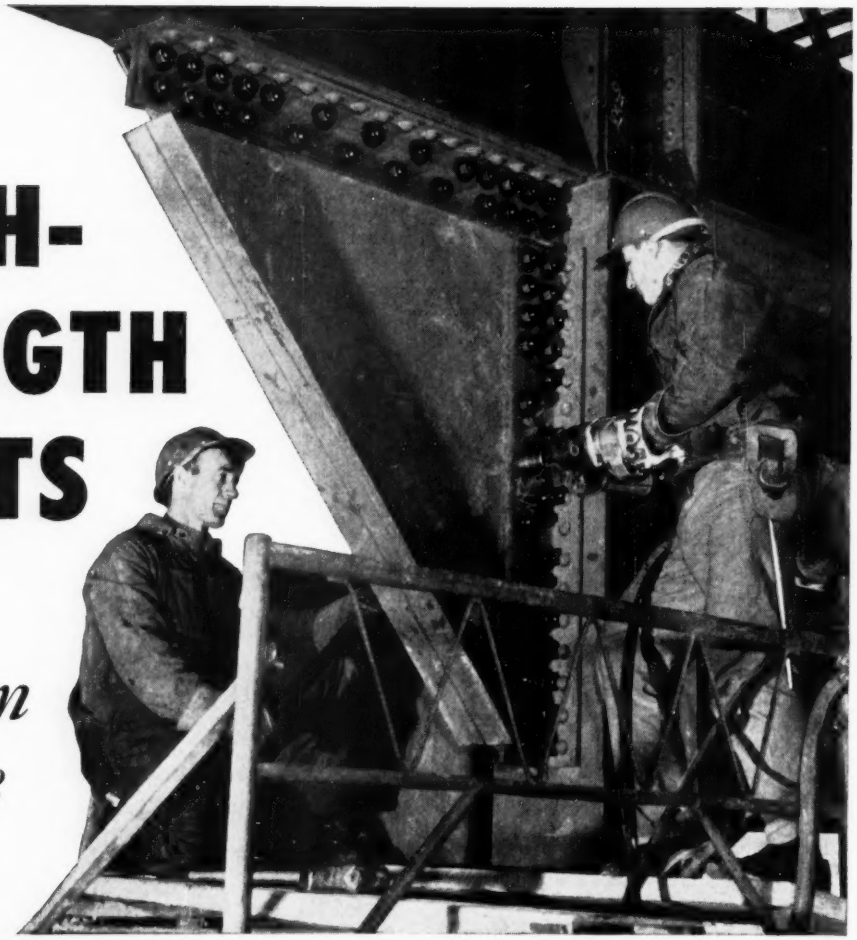

Erection of steelwork can be accomplished in less time when you use Bethlehem High-Strength Bolts to join the structural members.

Used in place of field-driven rivets, Bethlehem High-Strength Bolts are installed by a crew of only two men. One man operates an impact wrench, the other a holding wrench. No other tools are needed.

In installing these high-strength bolts, two hardened washers are placed on each bolt, one washer going under the head, the other under the hexagonal nut. This makes possible the development of maximum clamping force, without deforming the connected material.

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Bethlehem High-Strength Bolts are made at our fasteners plant at Lebanon, Pa. They are heat-treated by quenching and tempering, to meet the requirements of ASTM Specification A-325.

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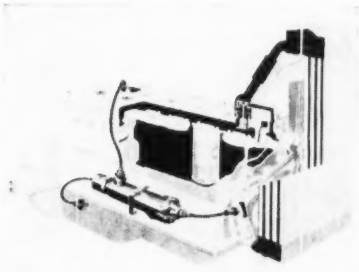
We've just issued a 16-page booklet, "High-Strength Bolting for Structural Joints," giving detailed technical information about the advantages of high-strength bolts in erecting steelwork. Two colors, illustrated. If you would like to have a copy, write to Publications Dept., Room 1039, Bethlehem Steel Company, Bethlehem, Pa.

**LOW COST HOIST**—Husky, yet lightweight, is the new hydraulic twin-cylinder hoist designed especially for 8- to 17-ft long platform bodies and 8- to 10-ft dump bodies. Said to be ideal for contractors, lumber supply men and others who have been waiting for a low cost, all-hydraulic hoist. Operating features claimed for the new hoist include a 50-deg dumping angle for swift and positive dumping of all materials and a new low in mounting height, with the space from the top of the truck chassis to bottom of the body only 9 15/16 in. for an easy hand loading height. Payload capacity of the new hoist ranges from 3½ tons to 6¼ tons.—**The Heil Co., Milwaukee 1, Wis.**

**NEW SCRAPER LINE**—A new line of open-top, tractor-drawn, rubber-tired scrapers ranging in capacity from 10.5 to 28.5 cu yd come in four sizes and are identified as Models 0-14, 0-19, 0-23 and 0-35. They are operated by a double-drum power control unit whose two cables work through swinging sheaves which are self-aligning.—**LeTourneau-Westinghouse Co., 2301 N. Adams St., Peoria, Ill.**



**COLD WEATHER OPERATION**—A device, called the KIM Hotstart electric pre-heater, is designed to cut the cost of cold weather operation of diesel and gas engines. The unit plugs into any electrical outlet and through a percolator-like action keeps the engine ready for instant starting even when vehicles are stored outside in sub-zero weather.—**KIM Hotstart Mfg. Co., 917 Broadway, Spokane 1, Wash.**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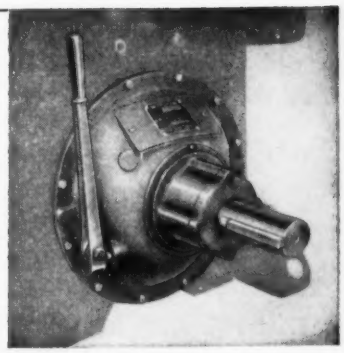
GEAR REDUCTION POWER TAKE-OFFS



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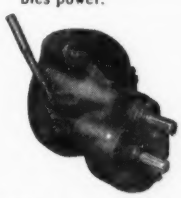

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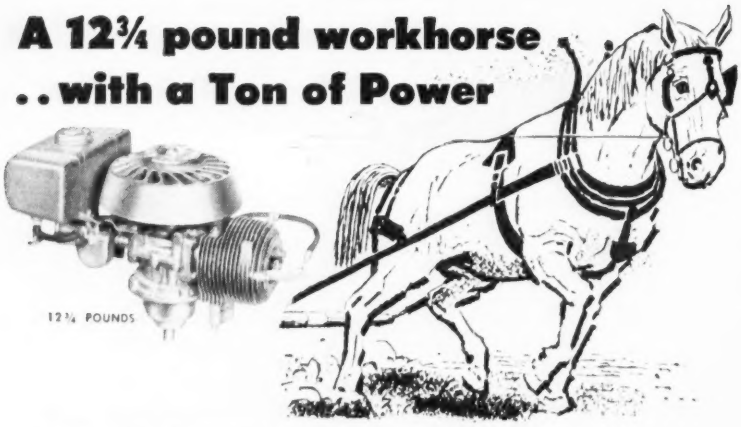


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**The catalogs and bulletins reviewed below will keep you posted on latest developments in construction equipment and materials available for your use.**

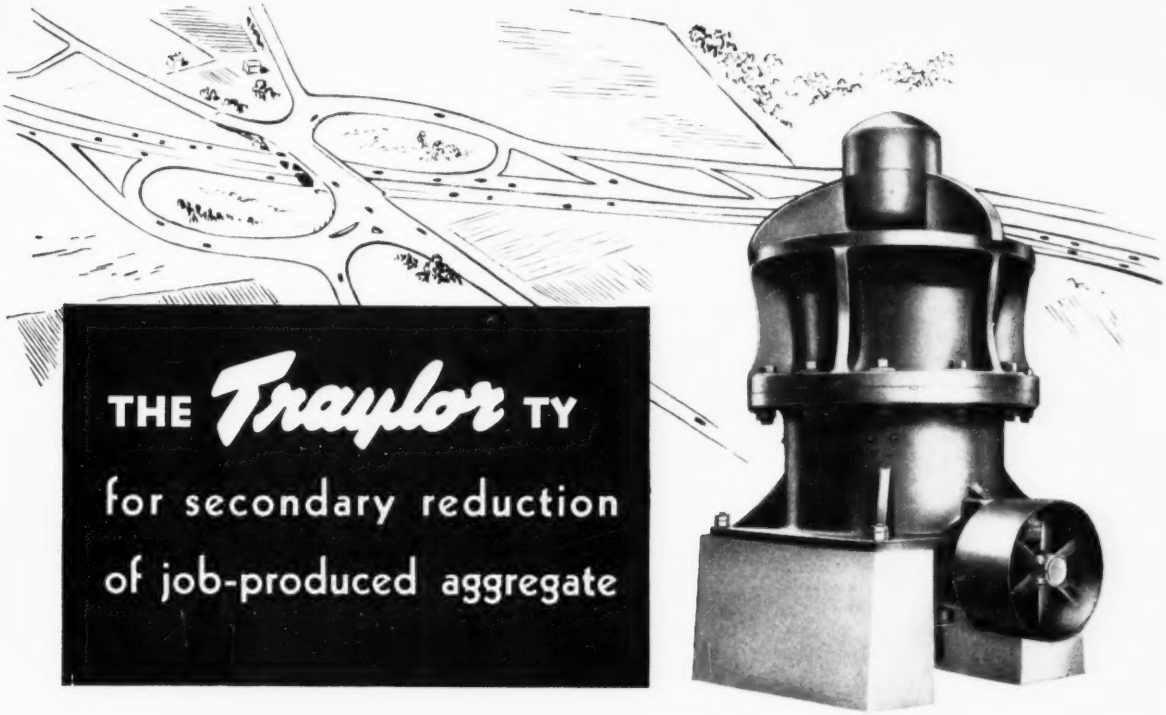
**THE ONAN STORY**—To learn all about the D. W. Onan & Sons, Inc. firm, manufacturers of electrical generating equipment, get a copy of the new four-color institutional brochure titled, "Measurement Factors of a Company and Its Product." It contains 120 eye-catching photos of Onan products . . . what they are and how they are manufactured. It tells pictorially what goes into the product, about people and planning. It's a good informative brochure. Copies are free.—**D. W. Onan & Sons, Inc., University Ave. S. E. at 25th, Minneapolis 14, Minn.**

**SERVICE MANUALS**—The Owatonna Tool Co. has just released six service manuals covering maintenance operations on Caterpillar, International, and Oliver-Cletrac tractors and FWD, Diamond T and International trucks. Also just published is a late manual on hydraulic pullers and presses. Copies are free. —**Owatonna Tool Co, Owatonna, Minn.**

**SHOVELS AND CRANES**—Thew Shovel Co. has just released a new 12-p, two-color bulletin illustrating the Lorain "80" series of power shovels and cranes. These machines are in the 1¾-yd class. Among the features illustrated are the roller-bearing-mounted swing shaft and hoist drum, the hydraulic coupling which prevents shocks and stalling in shovels, and the combination third drum and precision boom lowering device for cranes.—**Thew Shovel Co., Lorain, Ohio.**

**HIGH-STRENGTH BOLTING** — A new booklet describing the use of high-strength steel bolts instead of rivets in the assembly of structural joints has just been made available by Bethlehem Steel Co. This new method was recently indorsed by American Institute of Steel Construction.—Ask for Booklet 342, **Bethlehem Steel Co., Bethlehem, Pa.**

**LIFT TRUCK KNOW-HOW**—The fifth edition of "How to Operate a Lift Truck" has just been published by Hyster Co. and is now available free to lift-truck operators, supervisors, safety engineers and other interested industrial and governmental personnel. It's in cartoon style and has been slanted both for the beginner and experienced operator.—**Hyster Co., 2902 N. E. Clackamas St., Portland, Ore.**



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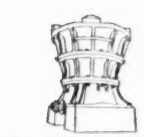
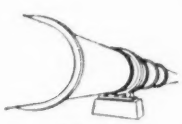
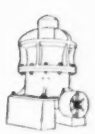


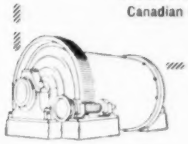
Primary Gyratory Crushers



Rotary Kilns



Secondary Gyratory Crushers



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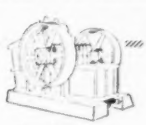
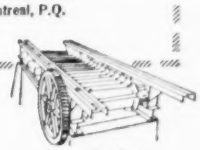


Jaw Crushers



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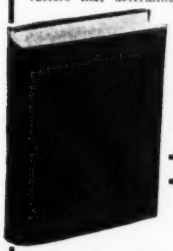

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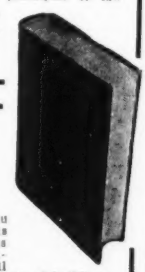

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- ☐ Kenney—**Blueprint Reading**—$4.00

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**VIBRO-TAMPER**—Construction details and operational advantages for the use of Vibro-Tampers in single-course, water-bound macadam construction are described in a well illustrated 4-p bulletin which contains a list of contractors and jobs where the Vibro-Tamper has been employed, making it easy for any interested party to talk to an actual owner.—**International Vibration, 16702 Waterloo Rd., Cleveland 10, Ohio**

**ELECTRIC TOOL CATALOG**—A 28-p catalog listing 52 portable electric tools and kits with more than 400 attachments for use in contracting, woodworking, industry and maintenance may be obtained by asking for Catalog 101.—**Porter-Cable Machine Co., 24 Exchange St., Syracuse 8, N. Y.**

**BELT-CENTER SELECTOR**—Belt-center selection for fans and compressors, determination of horizontal distances between shaft centers, and checking equipment clearances is made easy by the Korfund Belt-Center Distance Calculator. Accurate to 1/8 in., the calculator is designed to replace the lengthy calculations previously needed by giving the information in easy-to-use graph form. —**The Korfund Co., Inc., 32nd Pl., Long Island City, N. Y.**

**ELECTRODE-SELECTOR CHART**—Up-to-date information on the complete line of G-E welding electrodes is available in a new 4-p electrode-selector chart which contains condensed data on the company's line of mild-steel, low-hydrogen-low-alloy, ow alloy-high tensile, hard-surfacing and stainless steel electrodes.—**General Electric Co., Schenectady 5, N. Y.**

**AIR COMPRESSORS**—A new bulletin descriptive of the complete line of Davey portable air compressors has just been released. For copies write **Davey Compressor Co., Kent, Ohio**

**EXHAUST PURIFIER**—OCM Catalytic Exhaust, a device for removing carbon monoxide fumes and odors from all types of gasoline-powered equipment, is illustrated and described in a 4-p folder. The book points out how the OCM Catalytic Exhaust permits safe indoor operation of gasoline engines, as well as in many places previously thought mpractical, such as in mines and tunnels. The exhaust is available installed on new equipment or can easily replace present mufflers without need for changing clearances.—**Oxy-Catalyst Inc., Wayne, Pa.**

**STEEL MATERIALS**—The complete line of all steel materials handling products manufactured by Elizabeth Iron Works, Inc., is illustrated and described in a new 6-p, 2-color folder divided into three sections which show ramps, hooks and pallet stackers.—**Elizabeth Iron Works, Inc., Box 360, Elizabeth, N. J.**

FOR LOGGING, MINING, STRIPPING, PUSH-LOADING SCRAPERS, EXCAVATING AND TOUGH DOZING—USE

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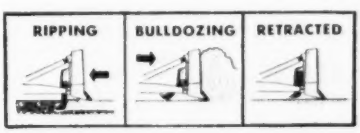
Welded to the reverse side of bulldozer moldboards, Preco Back-Rippers put deadhead time to work by ripping when the bulldozer backs up and floating freely when blading forward. See your "Caterpillar" dealer or write us for information.

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**FEATURES:**

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**WHY GAYCO GIVES HIGHER PRODUCTION**

Get more uniform sand and get it faster with a GAYCO Centrifugal Separator. The ADJUSTABLE centrifugal sizing fan means closer separation and less undesirable oversize—an exclusive GAYCO feature. Yes—all the sand you need, correctly sized, faster, at low cost per ton, with a GAYCO; protected by a Guarantee.

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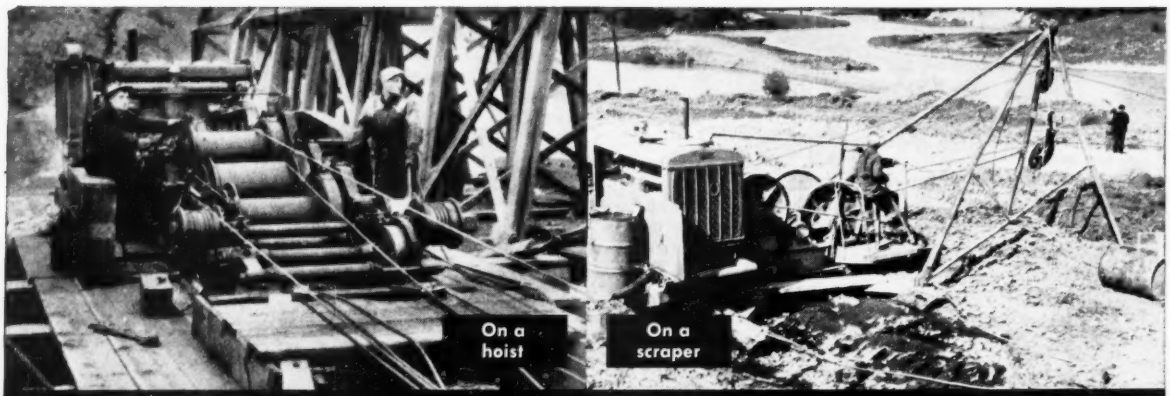
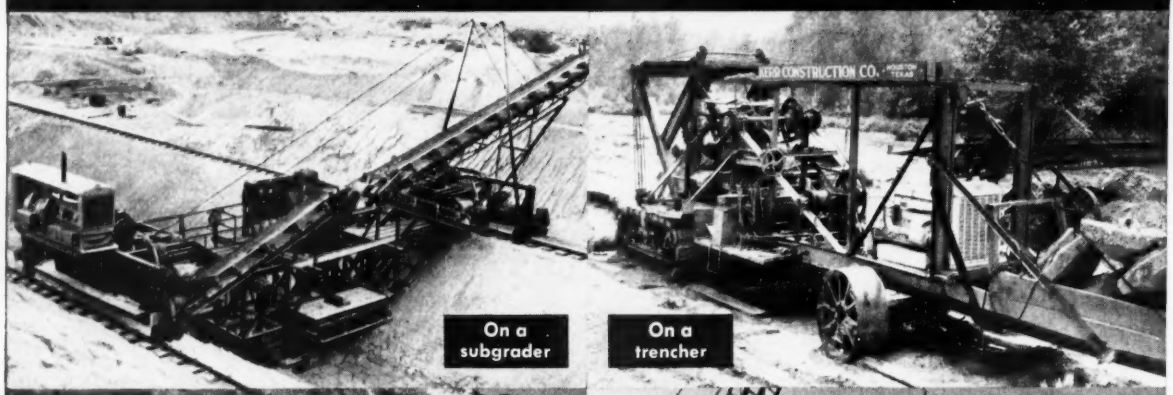
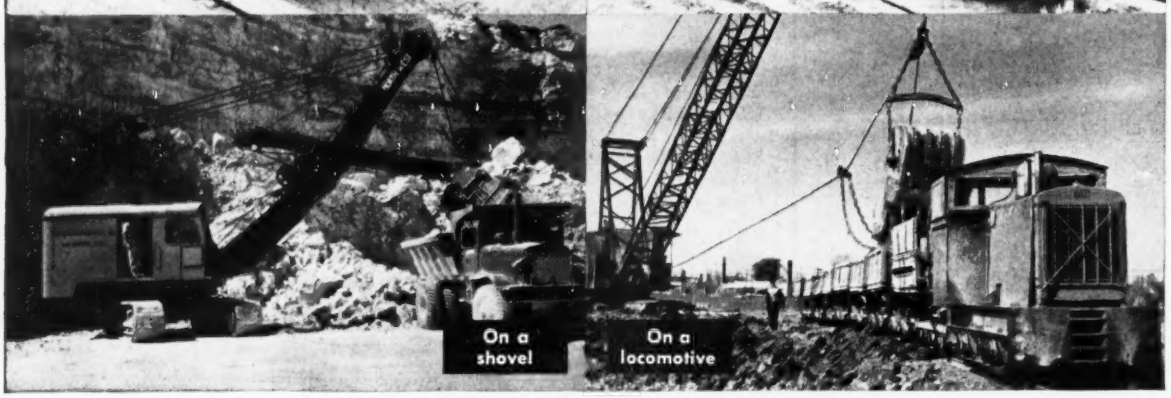



# You'll get the most out of your construction equipment with MURPHY DIESEL POWER

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259

MURPHY DIESEL

## *Heavy duty power* for construction

Murphy Diesel Engines and power units are available in sizes from 90 to 240 H.P. Engine speeds are 1200 and 1400 rpm. Also available are dual-fuel engines and altitude engines which will maintain sea level ratings up to 9000 ft. "Packaged" generating units are available with capacities ranging from 60 to 140 K.W. A.C. or D.C. voltages to suit your requirements.

**CONVEYOR FOR BUILDERS**—A 4-p bulletin, illustrating the new building conveyor for builders and contractors with action photos handling bricks, blocks, tile, lumber, packaged items and other building material, is being offered by **Fairfield Engineering Co., Barnhart St., Marion, Ohio**

**RUBBER SHEET PACKING**—A useful compact folder on Industrial Rubber Sheet Packing, containing important data on the weight, tensile and hardness of rubber sheet stock, is available from **Hamilton Rubber Mfg Corp., Trenton 3, N. J.**

**WASTE PUMPS**—Here's a bulletin on Municipal and Industrial Waste Pumps covering features, performance information, specs and selection data for plunger sludge pumps, mudhog diaphragm and self-priming centrifugal pumps of the Marlow line. Give your business connection when writing for this one.—**Marlow Pumps, Ridgewood, N. J.**

**STORAGE BATTERIES**—Described in non-technical language, this informative 24-p booklet on automotive storage batteries is often used as a basic textbook in schools and is suitable for instruction of all personnel associated with batteries. Copies may be obtained by writing to **The Electric Storage Battery Co., Box 8109, Philadelphia 1, Pa.**

**PAYLOADER TRACTOR SHOVEL**—Profusely illustrated with action shots of the 1 cu yd Hough Model HR 4-wheel drive Payloader, a new 16-p catalog is now available from **The Frank G. Hough Co., 706 Seventh St., Libertyville, Ill.**

**AID FOR PURCHASING AGENTS**—Engineers with wire rope experience know how to write the specifications for such material, but others, including purchasing agents, experience trouble in gathering this type of information. To overcome this difficulty, the Bergen Wire Rope Co. has prepared a special data sheet that lists the various service conditions affecting wire rope. Copies are free. **Bergen Wire Rope Co., Lodi, N. J.**

**PORTABLE POWER TOOLS** — A new catalog describing the complete line of portable power tools available from Syntron has just been released. Identified as Catalog 537, one can be obtained by addressing a request to **Syntron Co., 500 Lexington Ave., Homer City, Pa.**

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With FORMULA NO. 640, a clear liquid which penetrates 1" plus in concrete, brick, stucco, plaster, etc. Seals out water, dirt. Holds 20' head. Use outside and in. Preserves all absorbent materials. Sold 14 years. Quick, economical, sure. $3 in 55's. Free sample. See Sweet's.
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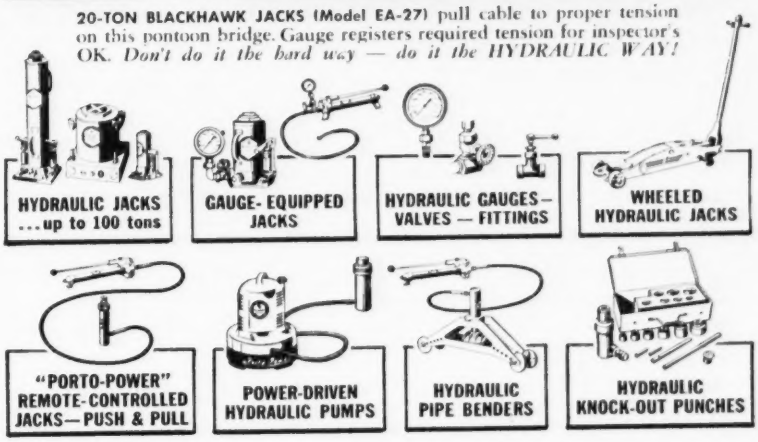
## ...from the world's most complete line of hydraulic jacks

20-TON BLACKHAWK JACKS (Model EA-27) pull cable to proper tension on this pontoon bridge. Gauge registers required tension for inspector's OK. *Don't do it the hard way — do it the HYDRAULIC WAY!*

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Save buying time when you need hydraulic equipment. Specify Blackhawk—and be sure you'll get the hydraulic tool that will match your requirements exactly. Order from leading supply houses. Write for free catalogs. Products of Blackhawk Mfg. Co., Dept. J-23113, Milwaukee 1, Wisconsin.

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get BIGGER PROFITS every day

MILLER *Tilt-Top* loading cuts time between jobs!

Time saved between jobs means more profit on every job. Where large flat bed trailers are usually too cumbersome for fast jump hauling . . . a MILLER Tilt-Top is always handy for moving dozers, tractors, etc. Self-movers practically load themselves onto tilted platform and can be towed to the next job in jig time . . . cutting nonproductive time for operator and equipment to a minimum. Standard oak platform is 8' x 14', optional 16' available.

**MODEL "B" 10 TON $1175.***

The following equipment is optional and extra: hydraulic tilt control, two speed winch, electric brakes.

*Plus Freight and Federal Tax

**SEE YOUR DEALER OR WRITE**

*Trademark reg.*

**MILLER RESEARCH ENGINEERS**

Tilt-Top TRAILERS

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**STEEL FORMS**—For building concrete curbs, curb gutters and sidewalks, steel forms are discussed in a new booklet. Interchangeable face, build-up, heavy-duty, dowel, two-piece rigid radius, flexible radius and specials such as island forms are pictured and reviewed.—**Heltzel Steel Form and Iron Co., Warren, Ohio**

**EARTHMOVING** — "Cut Yardage Cost" is the title of a new booklet issued by Caterpillar. Featuring DW20 and DW10 tractors and wagons, the booklet explains how earth, ore and other bulky materials can be moved at low cost per cu yd. Ask for Form 30752.—**Caterpillar Tractor Co., Peoria, Ill.**

**DRAINAGE**—An illustrated drainage material booklet, designed to assist engineers in preparing specifications for road projects and entitled, "Highway Drainage Makes the News", may be obtained from **The Bowerston Shale Co., Bowerston, Ohio**

**VIBRATING SCREEN**—A booklet describing Hewitt-Robins new style J Vibrex vibrating screen is ready for distribution. The screen is especially recommended for use in small quarries, roadside contractor plants, cinder block plants, and building construction work.—**Hewitt-Robins, Inc., Stamford, Conn.**

**EMERGENCY ELECTRIC POWER**—A catalog describing and picturing Homelite carryable generators, designed to supply emergency electric power when storms, fires, floods or accidents disrupt normal power supply, has just been offered free. The literature explains the various functions and uses of these compact, lightweight, gasoline-engine-driven generators for industry. For copies write **Homelite Corp., 865 Riverdale Ave., Port Chester, N. Y.**

**SUPERCHARGER** — How Miehle-Dexter Supercharger boosts the power of diesel and gasoline engines is the subject of a new descriptive 4-p bulletin which points out that the addition of a supercharger to current or projected engine designs is said to be easy and is often a less costly way of obtaining additional power without increasing space requirements or engine weight. This folder is available by writing **Miehle-Dexter Supercharger Div., Dexter Folder Co., Racine, Wis.**

**INDUSTRIAL EXPLOSIVES**—Offering aid in selection of industrial explosives for underground and strip mining, quarrying and construction, seismic prospecting, pipelining, and oil field work is this new booklet which includes 80 illustrations and more than a score of tables. The index lists more than 150 items. Copies are free.—**Atlas Powder Co., Wilmington 99, Del.**

# Synchronized Power

## writes earth-moving success story

One of Roy Kohl's five scrapers hauling a 24-yard load at Lockbourne Air Force Base. On this 212,000-yard job, the scrapers load in 90 seconds and travel to the spreading site at 30 mph.

In 1949, Roy Kohl was a basement excavating contractor in Ohio. During the last four years he has changed his operation and has moved more than 2½ million yards of ore, earth and clay on many types of big jobs.

His success story is built around the operation of 5 tandem-engine Euclid scrapers. The tandem-engine application—one pulling and one pushing—was made possible by Allison TORQMATIC DRIVES which synchronize the power of both engines through a simple control.

Kohl, like other operators, has found that Allison matched Torque Converters and hydraulic Transmissions contribute many ways to the more successful use of heavy-duty equipment. Most important, of course, is the ease of operation; the engines' ability to work at peak efficiency; and the cushioning effect which eliminates harmful shock on engines and the entire drive line.

Kohl reports his "Eucs" operate under all conditions, and climb up to 50% grades under full load. The five units now average over 2,000 hours a year. His first scraper moved more than a million yards without any major maintenance on Converter or Transmission.

Your dealer can give you more information about low-cost equipment maintenance where Allison TORQMATIC DRIVES are installed or you may wish to write Allison direct for full particulars.

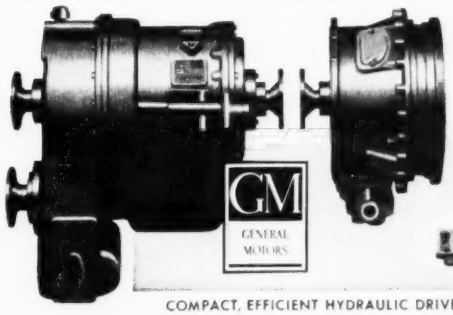
**ALLISON DIVISION OF GENERAL MOTORS**
**Box 894TT, Indianapolis 6, Indiana**

### *ALLISON TORQMATIC DRIVES*

***Unbeatable Team for Maximum Operating Economy***

- *Quick-shifts* at full throttle with fingertip hydraulic control.
- *Holds* power to load at all times—no clutch pedal to push—no gearshift guess.
- *Cuts* maintenance cost by absorbing shock—eliminates engine lugging—prolongs equipment life.
- *Only* torque converter-transmission team designed to work as a unit and built by one manufacturer.

FIRST MATCHED UNITS BUILT BY ONE MANUFACTURER.




*Allison* **TORQMATIC DRIVES**

COMPACT, EFFICIENT HYDRAULIC DRIVES FOR CRANES • TRUCKS • TRACTORS • SCRAPERS • SHOVELS • DRILLING RIGS

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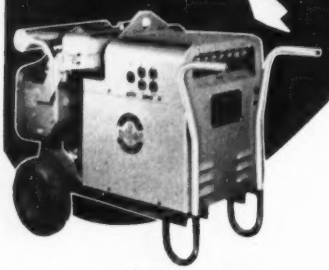
*Right to the Job!.... Anywhere*



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- POWER FOR LIGHTS
- POWER FOR TOOLS AND OTHER EQUIPMENT

**with all the power you need!**

MODEL AEA-200L
Engine driven A.C. Arc Welder and power plant — 3 models

LOW OPERATING COST — LOW MAINTENANCE COST — LOW INITIAL COST — DELIVERS A FULL 200 AMPERES — WILL HANDLE A.C. OR A.C.-D.C. ELECTRODES FROM 1/16" TO 3/16" INCLUSIVE

An arc welder and power plant combined—so compact and easily portable that you can take it right to the job—anywhere. The MILLER Model AEA-200L is a high cycle, high efficiency A.C. generator that gives you all the advantages of A.C. welding.

One KW of auxiliary D.C. power to operate lights and universal power tools available while welding.

It is also an emergency power plant. All standard electrical appliances within the power rating (3 KW, 110/220 volts) can be operated.

*Write today for complete details and the name of your nearest MILLER distributor.*

miller — ELECTRIC MANUFACTURING CO.
SINCE 1929 • APPLETON, WIS.

# Extra-Strength makes BUCH #155 Favorite Concrete Barrow!

Hardwood or Tubular Handles
21" Lip, Greater Depth
5 cu. ft. Heaped
Pneumatic or Cushion Tires
Riveted with Welded Seams
Plain, Ball or Roller Bearings

**BUCH #155** The BUCH 155 is designed to carry more . . . yet go through narrow doorways. Famous BUCH quality construction means more wear, lower cost on the job. Yet BUCH barrows cost no more. Also available with non-corrosive aluminum tray. *Send for leaflet showing Buch Contractors' Barrows.*

Carrying the load since 1868 — Buch — Better-Built Barrows for ALL INDUSTRIAL MOVING

BUCH MANUFACTURING COMPANY • ELIZABETHTOWN, PA.


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# HOW MALSBARY STEAM CLEANERS SAVE DOWNTIME IN WINTER

Two men and two MALSBARY 250's clean this tractor in 35 minutes.

When King & Brenaman's tractor-scraper rigs stood overnight without cleaning in Ontario's winter weather, mud froze, caused cable breakage and costly downtime. Pick and shovel cleaning proved impractical. Then two MALSBARY 250 heavy-duty cleaners whipped the problem by completely steam cleaning the entire fleet of 47 big rigs each night in approximately 7 hours.

Another MALSBARY Model 250 in Leduc, Alberta, keeps hydrants, standpipes and sewer lines thawed out during subzero weather.

## Exclusive Pumping System

Winter or summer, MALSBARY exclusive patented pumping system delivers 2 to 4 times more pressure than steam vapor cleaners . . . at temperatures to 325°F . . . lets you quickly blast abrasive, corrosive mud, grease and stubborn road oils from construction rigs; or de-gas, heat and clean asphalt tanks; do many jobs other cleaners can't touch. See for yourself—fill in coupon NOW for on-job demonstration.

3 heavy-duty models—250, 300 and 500. Oil or gas fired; gas engine or electric drive; stationary, portable or trailer mount. All develop hot solution in 2 to 3 minutes. Gadget free, dependable.

MALSBARY
SINCE 1921 MANUFACTURING CO.
Room C-11, 845 92nd Ave.
Oakland 3, Calif.

Malsbary Mfg. Co., Room C11, 845-92nd Ave., Oakland 3, Calif.

I AM INTERESTED IN—

☐ On-the-job demonstration.
☐ Free booklets on MALSBARY Cleaners.
☐ "How To Make Efficient Use of Steam Cleaning" reprint.

NAME POSITION

BUSINESS

ADDRESS

MAIL TODAY!

35

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*(Classified Advertising)*

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$1.50 per line, minimum 3 lines. To figure advance payment count 5 average words as a line. Discount of 10% if full payment is made in advance for 4 consecutive insertions.

**Positions Wanted & Individual Selling Opportunity Wanted** undisplayed advertising rate is one-half of above rate payable in advance.

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**The advertising rate** is $13.20 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

**An advertising inch** is measured ⅞" vertically on one column, 3 columns—30 inches—to a page.

**Send New Advertisements** to New York office, 330 W. 42 St., N.Y. 36, N.Y. for December Issue closing November 20th.

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### SURPLUS MINING & CONSTRUCTION EQUIPMENT

- COMPRESSORS
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- EUCLIDS
- PUMPCRETES
- TRUCKS
- SLUSHER HAULERS
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- ROCKER SHOVELS
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- DUMPTORS
- FARM TRACTORS
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- JACKHAMMERS
- MOTORS
- PORTABLE TOOLS

*On request we will send full details including price and when specific plant will be available*

**RAYNER-ATLAS, LTD.**
**BOX 359, NIAGARA FALLS, ONTARIO**

NEW & USED
PIPE • PILING
DRAINAGE CULVERTS
REINFORCING ROAD MESH
STRUCTURAL SHAPES
**COLUMBUS STEEL SUPPLY CO.**
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# Wellpoints "Blow-Proof" A Sewer Trench

This twin 90″ storm sewer is shown under construction in Paducah, Kentucky, by the D. W. Falls Construction Co.

Material to subgrade was stiff red clay – 13′ of it – while at subgrade was a layer of sand *under artesian pressure.*

A Moretrench Wellpoint System, installed through the clay into the sand, (1) lowered the water level, (2) relieved the hydraulic uplift pressure, (3) prevented hazardous "blows". Pipe laying proceeded in absolute safety in a stable, dry trench.

Find out from our nearest office how little it costs, how much you gain, when you work with Moretrench "in the dry".

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# Methods Memo . . .

**HAVE YOU NOTICED** Part 2 of the article "Concrete Mixing and Placing", beginning on page 103. Last month CM&E began another valuable series of articles crammed with on-the-job information useful to everyone, the big boss, the estimator, the superintendent and anyone around a job where concrete construction is under way.

The series will cover techniques, equipment, special materials, production factors and concrete placing in unusual situations. The authors in line to discuss various phases of concreting have long experience in their specialties, and their combined efforts are bound to produce a practical guide.

**WE WERE GUESTS** recently at the opening of a new welding electrode plant of the A. O. Smith Corp., located near Lancaster, Pa. The plant, which represents an initial cost of a million dollars, will supply electrodes for the eastern and southeastern markets.

A couple of things really impressed us. We had not realized the exacting conditions that must prevail to make a good consistent electrode. Close control of temperatures, humidity and cleanliness are big factors. Smith's plant resembles more what you would expect from a dairy, cosmetic or drug firm. The walls are all glazed tile, and the floors are vacuumed with a sweeper. They have a unique system which they call pressure balancing, which means the air and dust will seep out of the building instead of in.

**EXTRA-CURRICULAR ACTIVITIES.** Louis Sarno, construction foreman working on the elevated section of the new East River Drive in lower Manhattan, N. Y., spotted a youngster crawling through a fourth-story window. Sarno yelled, but his voice was drowned out by traffic below. So he sprinted 100 yd along a catwalk, slid down a ladder to the ground, sprinted another 100 yd to the building, arriving just in time to catch 2-yr-old Francis La Madrid in his arms. The tot was unharmed by his 50-ft fall. Sarno turned him over to goggle-eyed neighbors and went back to running his gang.

**PORTABLE SPACE HEATERS** are a "must" item on the equipment list of every contractor planning to extend his construction season. A modest investment in temporary heating equipment can take the element of uncertainty about the weather out of a concrete job, it can keep masonry going through the winter, thaw out frozen materials, pre-heat engines on machinery, supply heat in large buildings for equipment maintenance and do a thousand other jobs.

Turn to page 66 for practical help on the selection of temporary heaters. It is not a simple matter to figure heat requirements, because each project is different. But a few basic suggestions will make your choice of equipment more useful, whether you need only some of the simple salamanders or a high-output blower-type units.

**MEBBE WE ARE SOFT** but we are pretty well convinced that comfort and efficiency go hand-in-hand. Iron men on wooden rigs of yore make a picturesque tale, but the modern operator in a good warm cab will do more work. We were reminded again by a Parts-Service memorandum sent out the other day by Euclid Road Machinery Co. Its subject is the installation of hot water type cab heaters, resembling and operating exactly like automobile heaters.

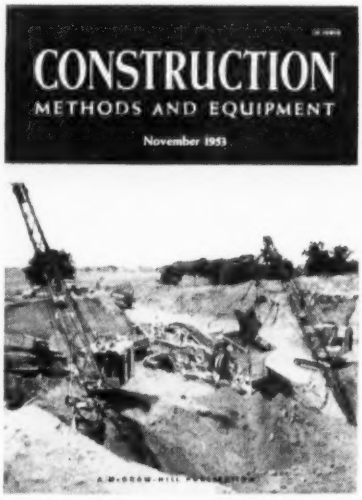
**BOLTED CONSTRUCTION** for large commercial steel-frame buildings has made its bow on the Pacific Coast. Structural steel for a large plant for the Schlitz Brewing Co., Van Nuys, Calif., was erected without the use of the noisy rivet gun. Instead, there was the high-pitched whine of air driven impact wrenches, as they brought 20,000 high-strength bolts to specified tension.

Proper bolt tension is achieved by getting the right air pressure through distribution lines and hoses. When too low, regulator valves on the compressors are set higher and a sample nut and bolt run up on a test gage until a 35,000-lb tension is reached on a ⅞-in. bolt. This is done with operating air pressures of 65 to 80 psi. Bethlehem Pacific Coast Steel Corp., erector of the Schlitz plant, states that high-strength bolting has proved to be an important structural fastener for certain types of structures.

**LOOKING BACK ON 50 YEARS** of construction, A. J. Miller, Jr., vice-president of the Baton Construction Corp., Philadelphia, reminisced for a while on his experience since the turn of the century. He cited dramatic changes: Carpenter's wages have risen from 40c to $3.10 per hr; laborers then were paid $1.75 for a 9-hr day; today they receive $1.90 per hr with time and one-half and double time for work beyond 40 and 48 hr respectively.

Miller outlined many changes in construction equipment. When he started, earth was moved by shovel and wheelbarrow—or by horse and scoop at best—in contrast to today's power shovels, dozers and other earthmovers. Building design has changed radically, too. He recalls that materials such as steel and concrete were just coming into wide use 50 yr ago.

So, boys—the next time you have a tough one, reflect for a moment on "the good old days"!

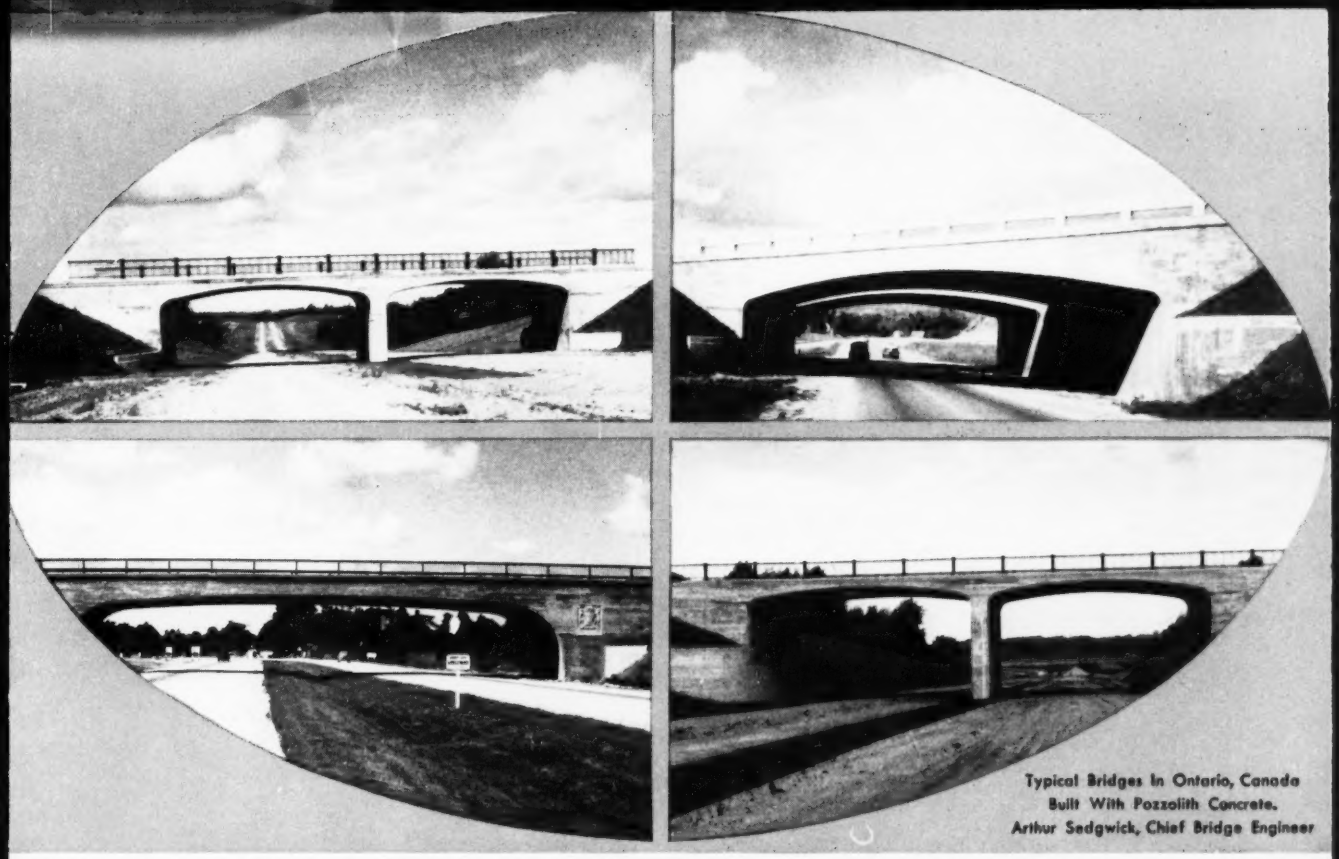



## On the Cover . . .

Stock piles ought to grow rapidly at the rate this Cedarapids Commander portable plant is pushing out the gravel for Clinton County, Iowa, roads. Material produced is minus 1¼ in. and production averages between 300 and 400 tph, with about 12% of the bank run having to be crushed.

The Cedarapids portable has a 10x36 jaw crusher, 30x22 roll crusher and Cedarapids horizontal vibrating screen, 48 in. x 10 ft with 2½ decks and able to handle three sizes of material. The plant is powered by a Caterpillar Model 337X diesel. Two Sargent draglines—1 yd and 1¼, powered by Cat D4600 and International UD16 diesels—dump on the grizzly. Note the few oversize rocks refused by the grizzly. Material is broken up and pushed toward the draglines with a TD-18 dozer. Ford trucks roll in close procession under the conveyor, haul the Class C gravel to stock pile for road surfacing.

Owner and operator is the Maudlin Construction Co., Webster City, Iowa, contractor and gravel producer.



Typical Bridges In Ontario, Canada
Built With Pozzolith Concrete.
Arthur Sadgwick, Chief Bridge Engineer

# 90 Bridges In Ontario Are POZZOLITH CONCRETE

BACK in 1938 the Ontario Highways Department built two bridges of identical design — one with Pozzolith Concrete, the other with plain concrete. Their reason for employing Pozzolith was to increase workability, making practical the use of a low water-cement ratio concrete in a thin, heavily reinforced section.

Such marked improvements were obtained in the concrete produced with Pozzolith that since that time, with the exception of an interval during the war years, all highway department bridges in Ontario have been Pozzolith Concrete.

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Among the improved qualities obtained with Pozzolith Concrete are the following:

- GREATER DURABILITY — for longer life concrete
- REDUCED SHRINKAGE — for less cracking
- LOWER PERMEABILITY — for less "waterproofing" expense
- MINIMIZED SEGREGATION — for better appearance
- INCREASED BOND-TO-STEEL — for better construction
- EASIER PLACEABILITY — for lower placing costs

*Full information on Pozzolith and "See-for-yourself" demonstration kit supplied on request . . . without cost or obligation.*

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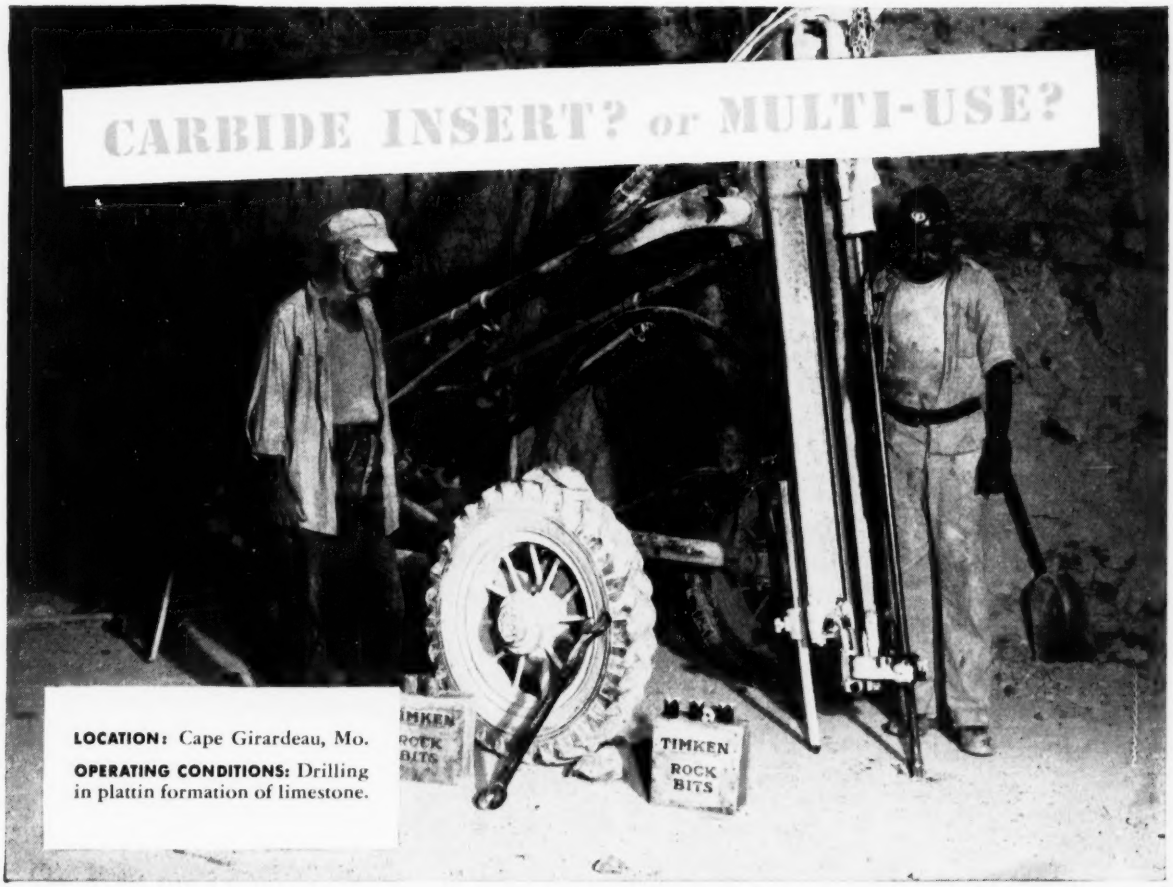


# Federal Materials Co. gets lowest cost per foot of hole in controlled limestone drilling tests with TIMKEN® multi-use bits

IN controlled drilling tests, Federal Materials Co. found Timken® multi-use bits gave lowest cost per foot of hole—outperformed other types of bits in plattin formation of limestone in pit and underground quarrying operations.

For ordinary ground, Timken multi-use bits are most economical. With correct and controlled reconditioning, they'll give the lowest cost per foot of hole when full increments of steel can be drilled.

But they may *not* be the best answer for all your drilling problems!

When the ground is hard and abrasive, Timken carbide insert bits give the highest speed. They're most economical for constant-gage holes, small diameter blast holes, extremely deep holes.

Most important of all, both Timken carbide insert and multi-use bits are interchangeable in the same thread series. A wide range of different Timken bits fit the same drill steel. You change bits quickly, easily as the ground changes—right on the job!

Both Timken carbide and multi-use bits are made from electric furnace Timken fine alloy steel and have special shoulder unions, originated by Timken, that protect threads from drilling impact.

To find out the bit type most suited to your drilling needs—whether multi-use, carbide insert, or both—call on the Timken Rock Bit Engineering Service. Write The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable address: "TIMROSCO".

Timken threaded multi-use rock bit

Timken threaded carbide insert rock bit

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